Alexandria Railroad Bridge Replacement

November 5, 2009 7:30PM

Replace the Tracks 2 & 3 Bridge and Raise the Existing Track 1 Bridge

Presented by:

CSX Transportation, Jacksonville, FL

Virginia Dept. of Rail and Public Transpiration, Richmond, VA

City of Alexandria

Virginia Railway Express, Alexandria, VA

Amtrak, Washington, DC

HDR Engineering, Inc. Alexandria, VA

Skanska USA Civil Southeast Inc., Virginia Beach, VA

Presentation Overview

- **Why:** Project Purpose, Need, and Benefits
- **Who:** Project Team and Key Stakeholders
- **What:** Bridge Replacement
- **Where:** Project Location
- **When:** Timeline of Major Events
- **How:** Overview of Construction Methods

WHY: Project Purpose, Need and Benefits

- Final project required under 2002 Memorandum of Understanding between VDRPT, VRE and CSX to build third mainline track between Washington and Fredericksburg to facilitate additional passenger rail service.
- Additional capacity is needed on one of CSX's busiest corridors…30 VRE trains, 18 Amtrak trains and up to 30 freight trains run in the corridor each weekday.
- Previously completed projects allowed two additional round-trip trains between Washington and Fredericksburg.
- Final project (AF to RW) includes seven miles of new mainline track between Franconia VRE station and Alexandria Union station, with single track bridge as the "link."
- 100-year old bridge has reached the end of its functional life…safe for one track but not two.
- When completed, AF-RW project will provide for new, state-sponsored Amtrak round-trip service between Washington and Richmond.

WHO: Project Team and Major Stakeholders

- **Owner:** CSX Transportation
- **Funding Agency:** DRPT
- **Benefactors:** Commuting Public
- **Adjacent Property Owners:**
  - Norfolk Southern, Kathmar Paving
  - City of Alexandria
- **Users:** Amtrak, VRE, CSXT
- **Engineer:** HDR Engineering
- **Contractor:** Skanska Civil Southeast USA

Project Information Available At:

City of Alexandria Website
www.alexandriava.gov/railroadbridge

or

CSX Point of Contact
Quintin Kendall
Government Affairs
804.592.2485
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WHAT: Bridge Replacement

Construct temporary falsework on which the bridge will be erected…build a bridge to build a bridge!

Replace the existing bridge within a very limited track outage.

Factors Controlling Bridge Design and Construction:

- Working between *five* active railroad tracks.
- Traffic (40+ trains per day) dictates outage.
- Span length / geometry dictate bridge type.
- Geology dictates foundations.
- Change out method: ‘Pick and Roll’

WHERE: Nearest Street Address 4500 Wheeler Ave.

WHEN: Project Timeline

Five Basic Phases of Work and Approximate Duration

- **Mobilization:** Began on October 15, 2009, Duration: Up to ***one month***. Includes: site clearing, crane delivery and assembly, material delivery.
- **Pre Change-out:** Scheduled last up to ***four months***, and will likely have the greatest impact on neighboring communities. Work includes delivery and assembly of the proposed bridge span and substructure. Contractor will construct a temporary steel structure on which the bridge will be assembled prior to the planned roll-in. Beginning in mid-November, the contractor will be driving piles for a limited period of time.
- **Span Change-out:** Most significant component of work. Schedule to be performed over a ***long weekend***. Contractor will remove the existing bridge and roll the new bridge into place. This phase of the work will involve interruption to passenger and freight rail service. Projects sponsors will coordinate with VRE and Amtrak to inform riders of the work.
- **Post Change-out:** Duration: up to ***two months***, will involve ancillary work on the project site, including a slight raise of the adjacent single track bridge. In addition, the new mainline track will be aligned with the new bridge.
- **Demobilization:** Final phase of construction. Duration: Approximately ***two weeks***. Includes removal of construction materials/equipment. Contractor will restore the site to its pre-construction condition to the satisfaction of the landowner.

WHEN: Significant Impacts

Minor Disturbance due to Pile Driving Activities

- **Types of Piles:** H-pile, Sheet Pile, and Pipe Pile.
  - H-Piles used as temporary shoring (earth support) for abutment construction
  - Sheet Piles used as temporary shoring for crane placement and pier excavation
  - Pipe Piles used for columns of temporary steel structure for bridge assembly
- **Type of Pile Equipment:** Vibratory vs. Impact Hammer
  - Pile type and location dictates method of placing piles.
  - Contractor has made efforts to use ‘quieter’ piles and placement method.
- **Tentative Construction Schedule**
  - Much of the work must be completed during nights and/or weekends due to normal weekday commuter train volume.
  - See **Table 1** that follows for details of schedule available at this time. Note: Schedule excludes holidays.
  - All dates and times offered here are subject to change due to normal, unpredictable interruptions to construction activities such as weather.

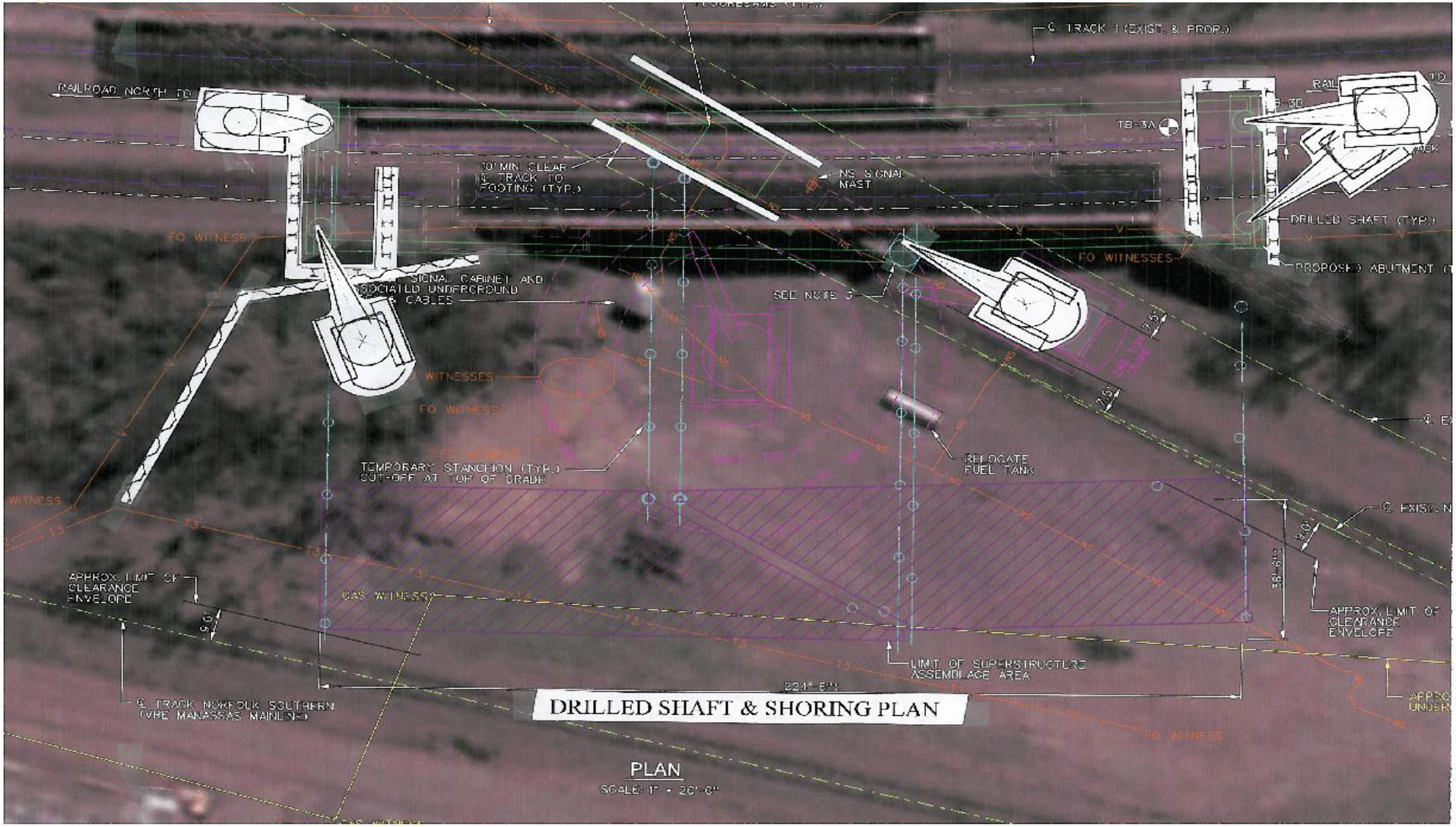
TABLE 1: Tentative Construction Schedule

(Related to Pile Driving Activities)

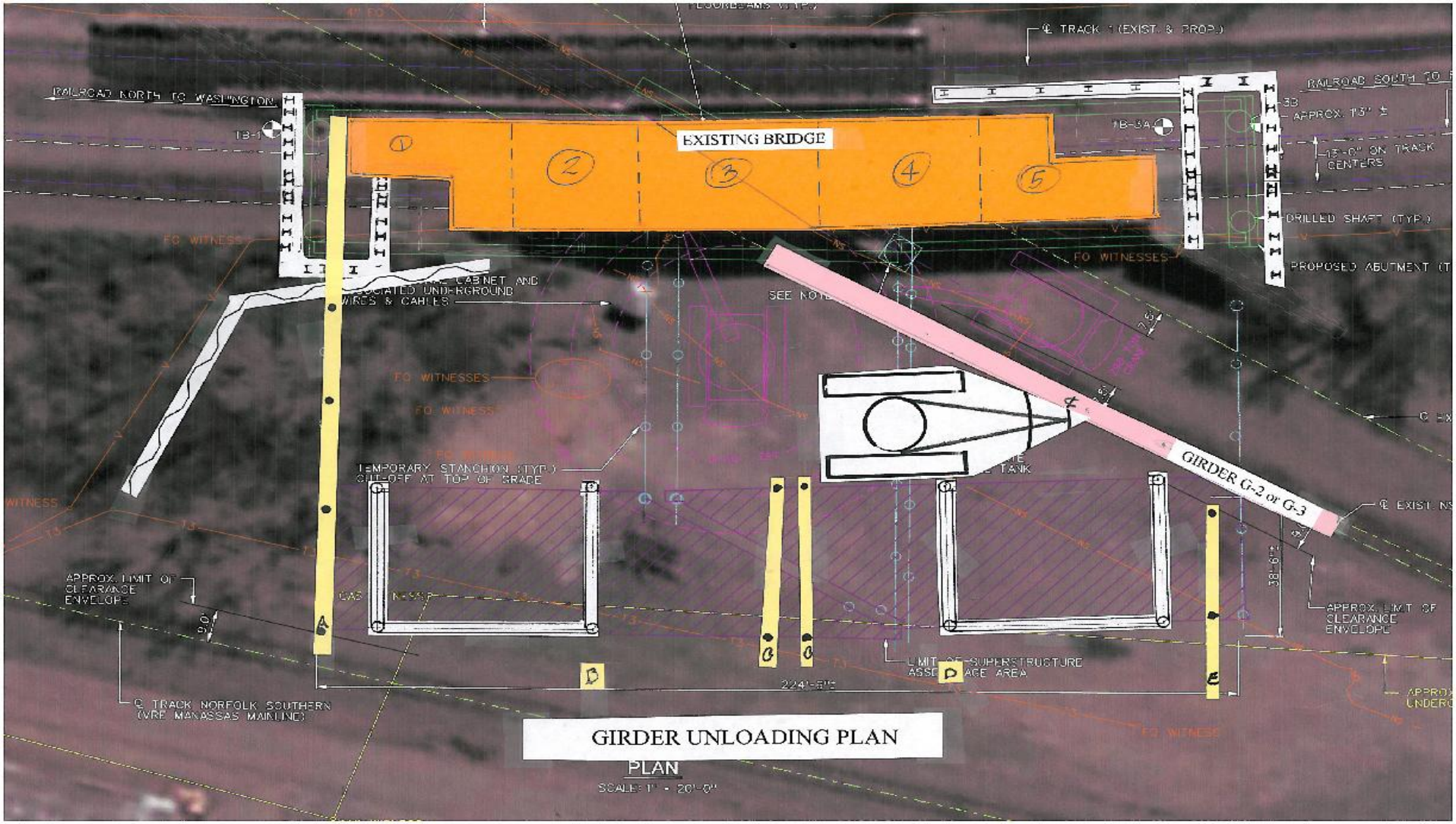
Activity	Approx. Date	Approx. Duration	Time of Day	Day(s) of Week
Vibrate and Strike approx. 65 H-Piles S. Abutment (44) N. Abutment (21)	 Nov. 18 Nov. 30	 8 days 4 days	7 pm to 4 am	Monday - Saturday
Vibrate approximately 2,000-linear ft. of Sheet Pile	Nov. 16	5 days	7 am to 4:30pm	Weekdays (M-F)
Drive 23-Pipe Piles	Nov. 23	14 days	7 am to 4:30pm	Monday - Saturday

HOW: Overview of Construction Method

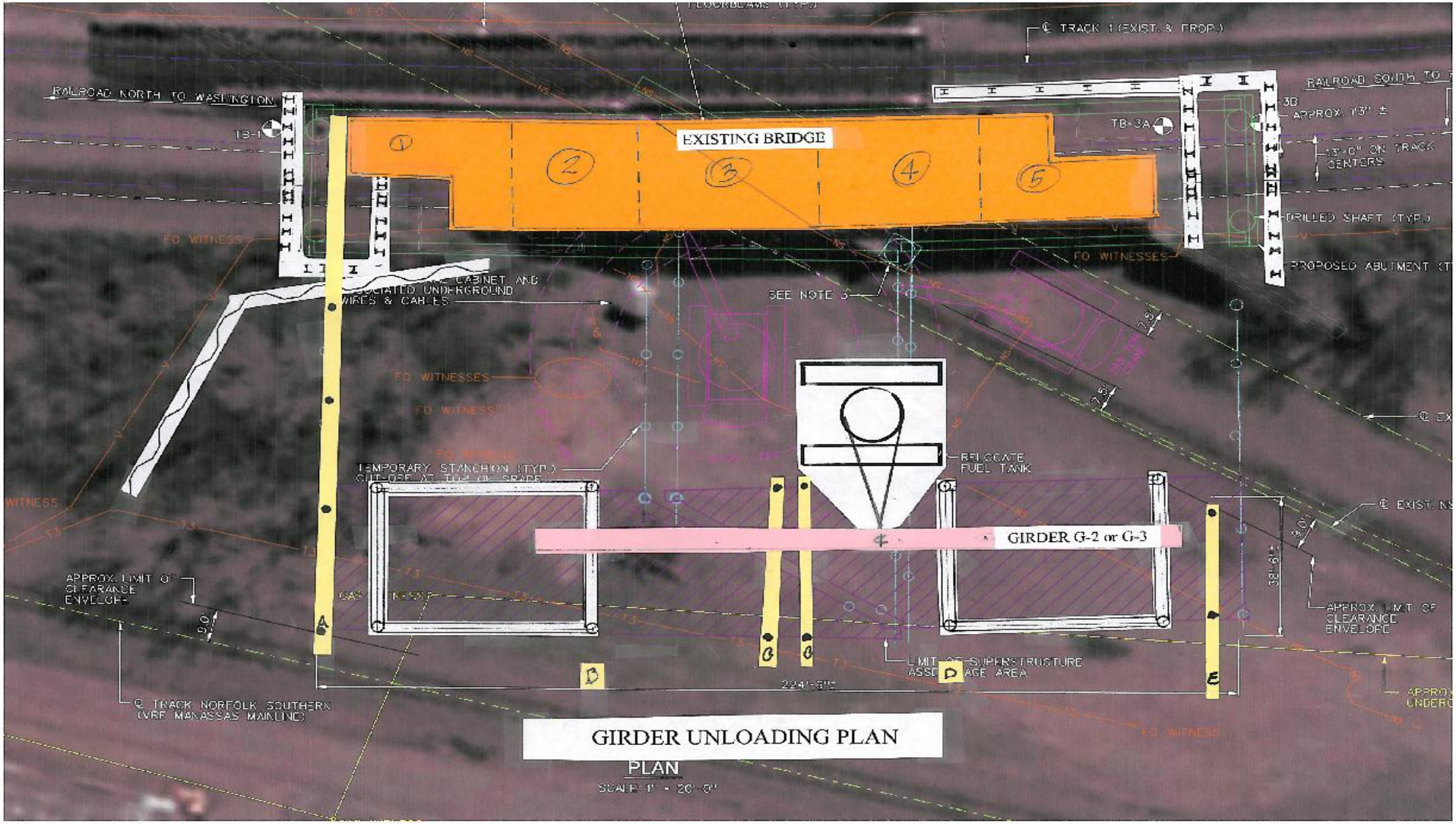
Drilled Shaft Equipment Lay Out



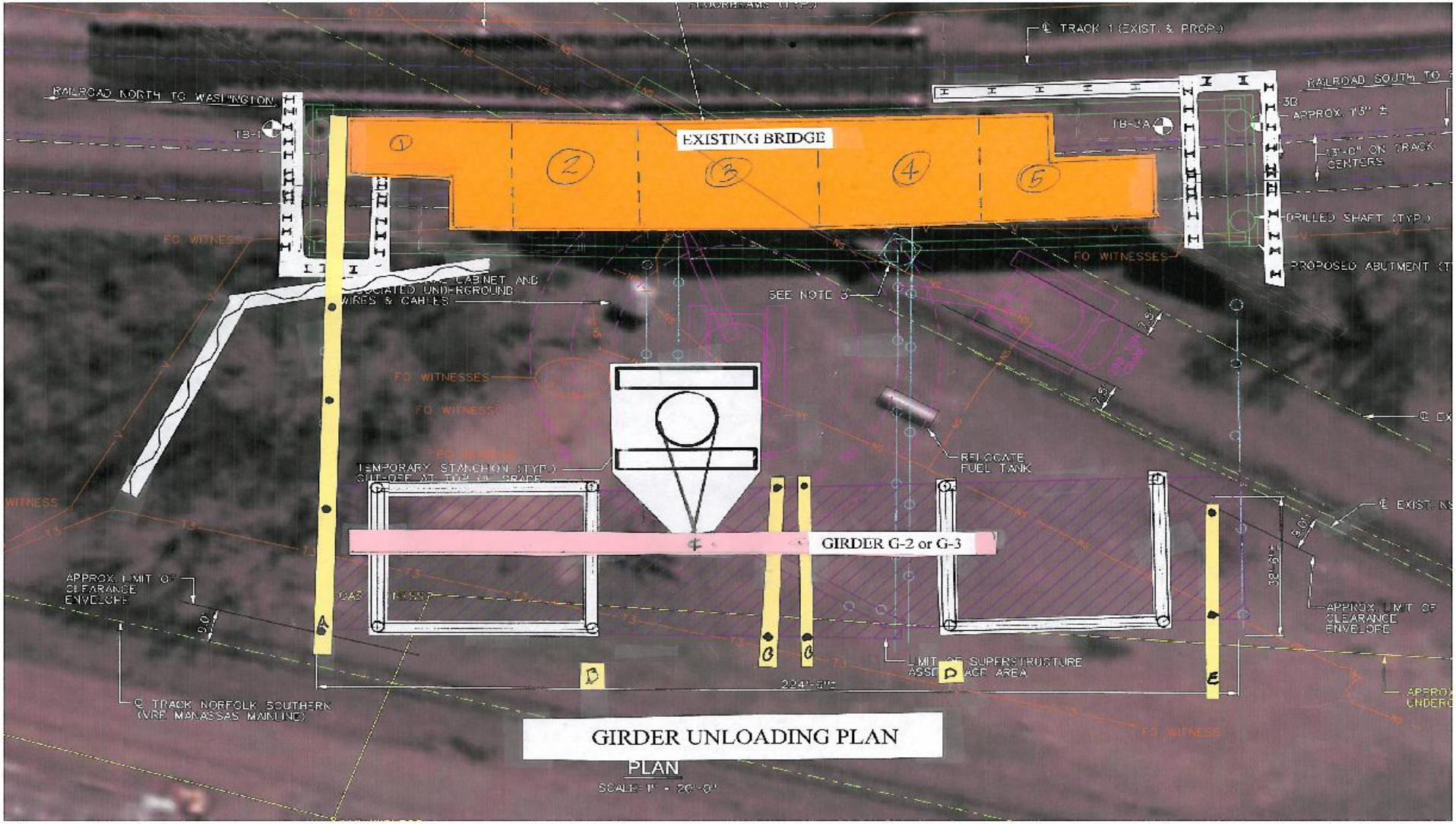
1st Girder Unloaded From NS Tracks



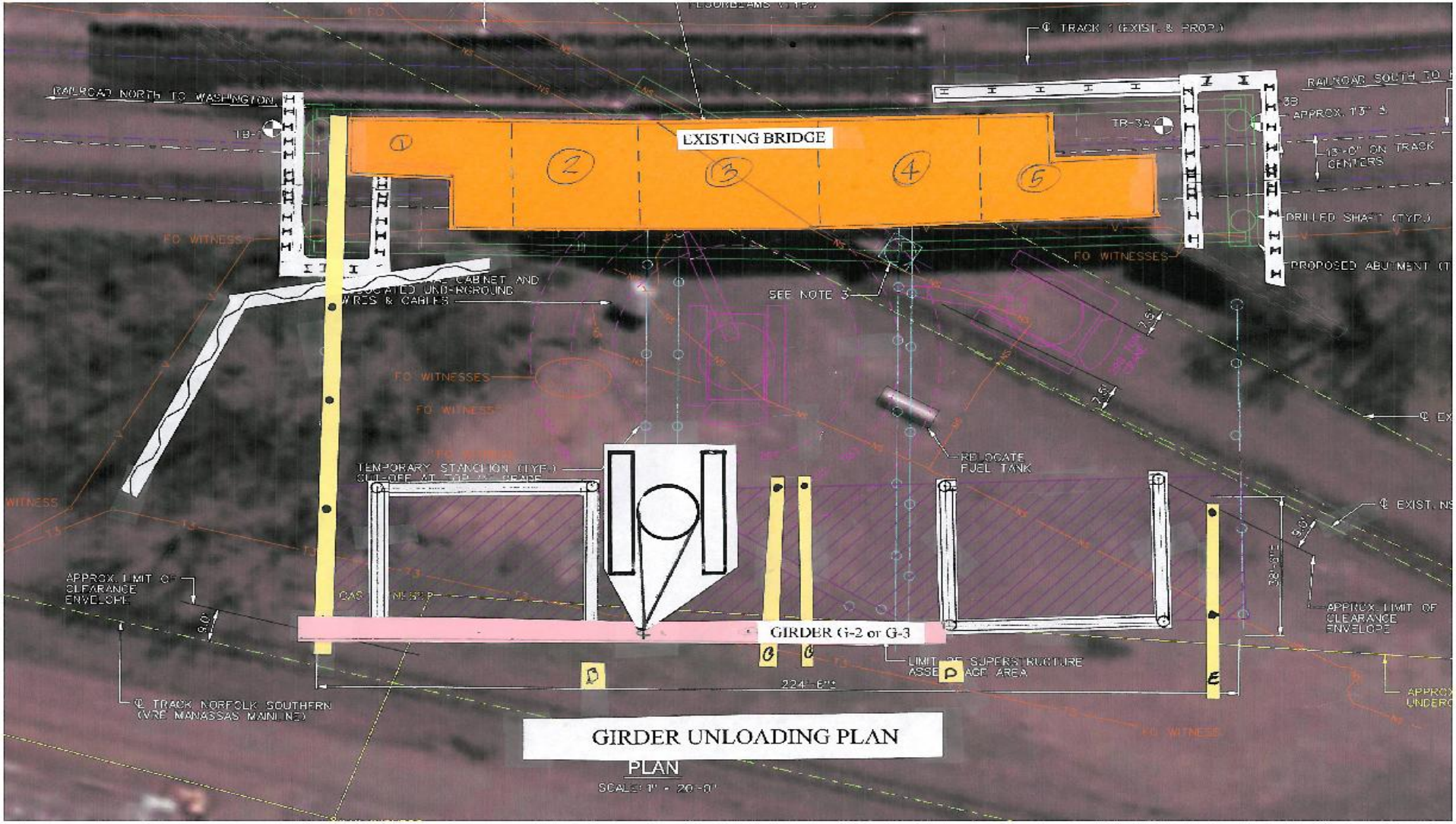
Unloading 1st Girder & Moving To Position



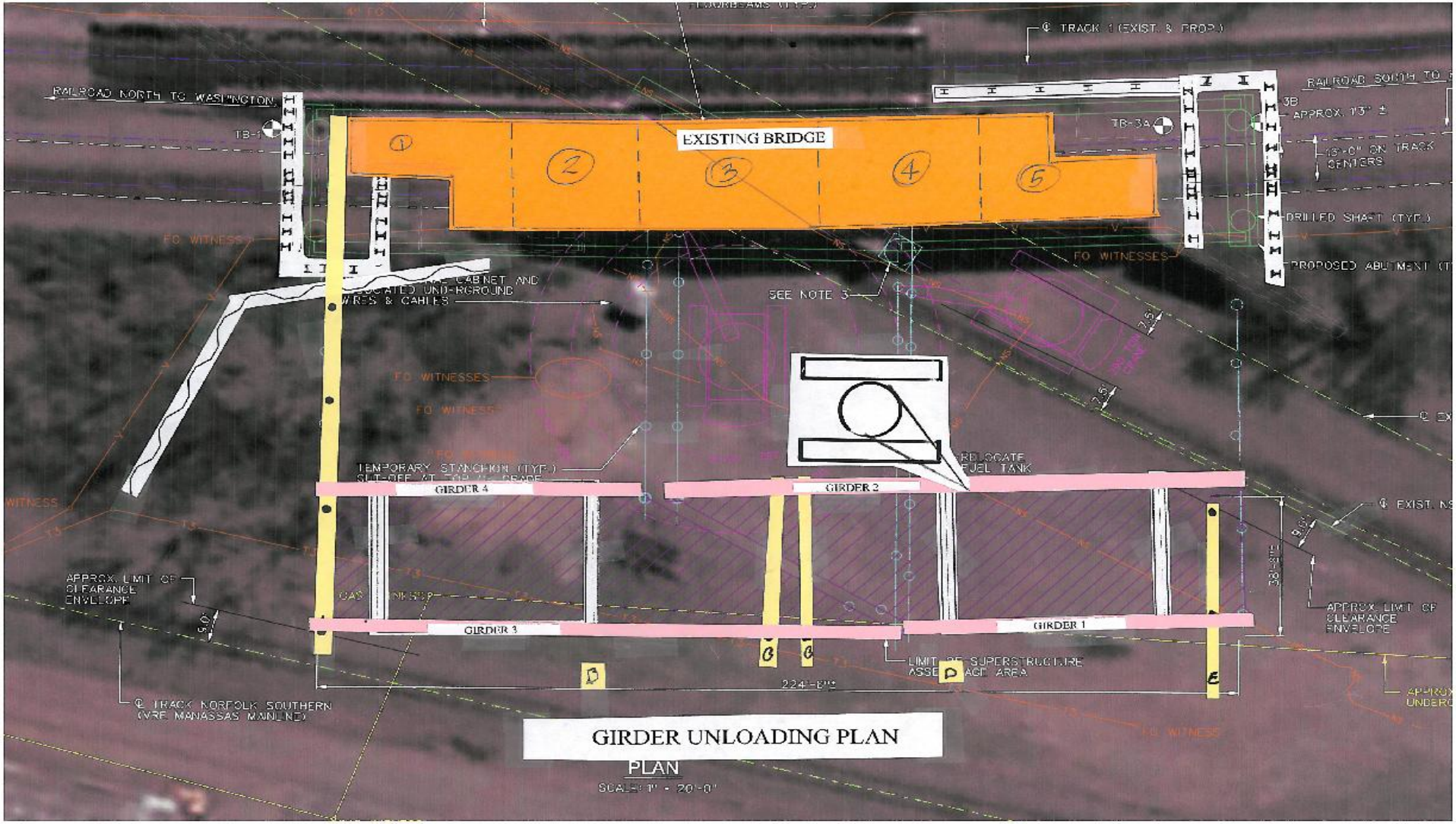
Moving 1st Girder Into Position



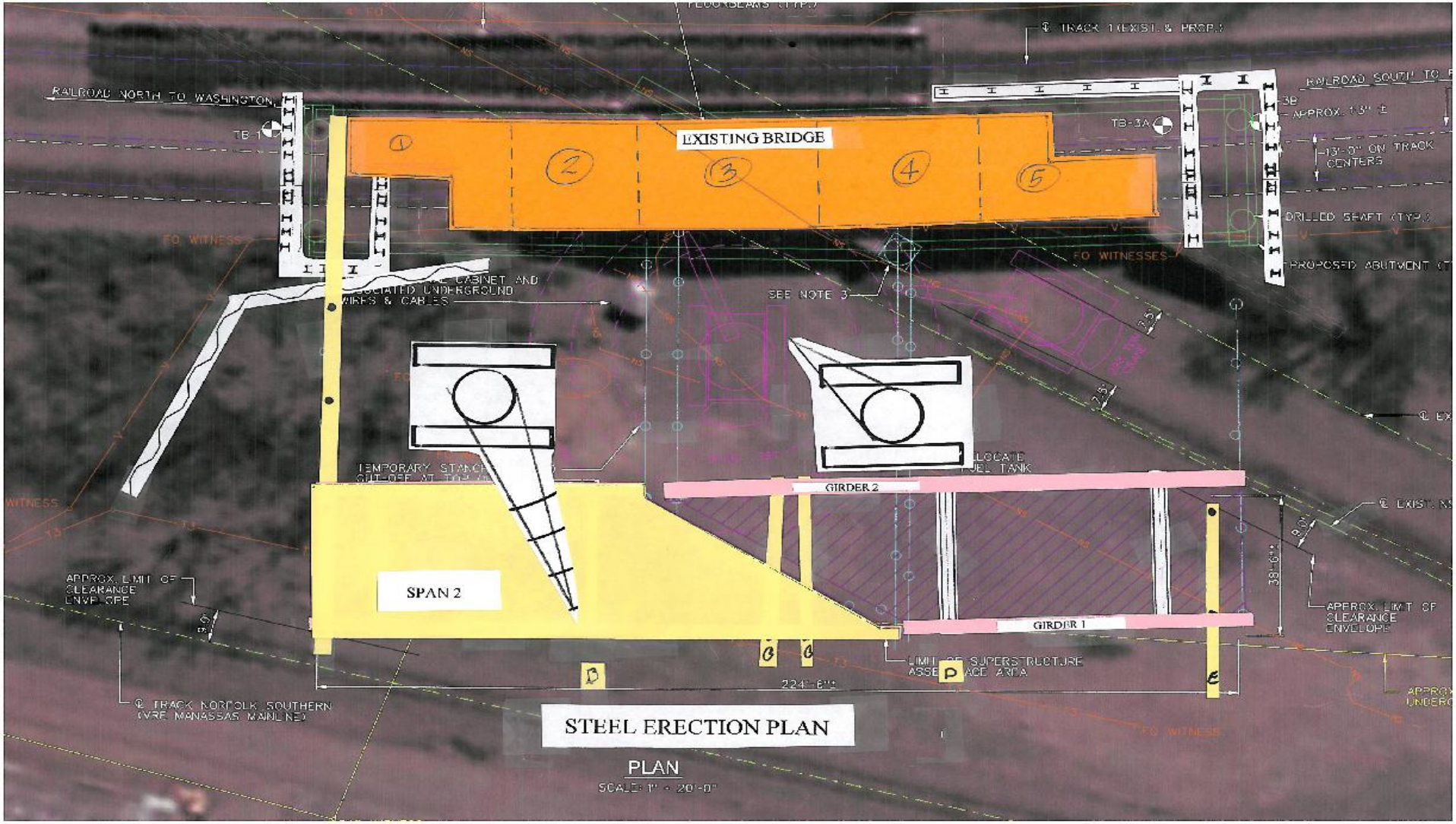
Moving 1st Girder Into Position



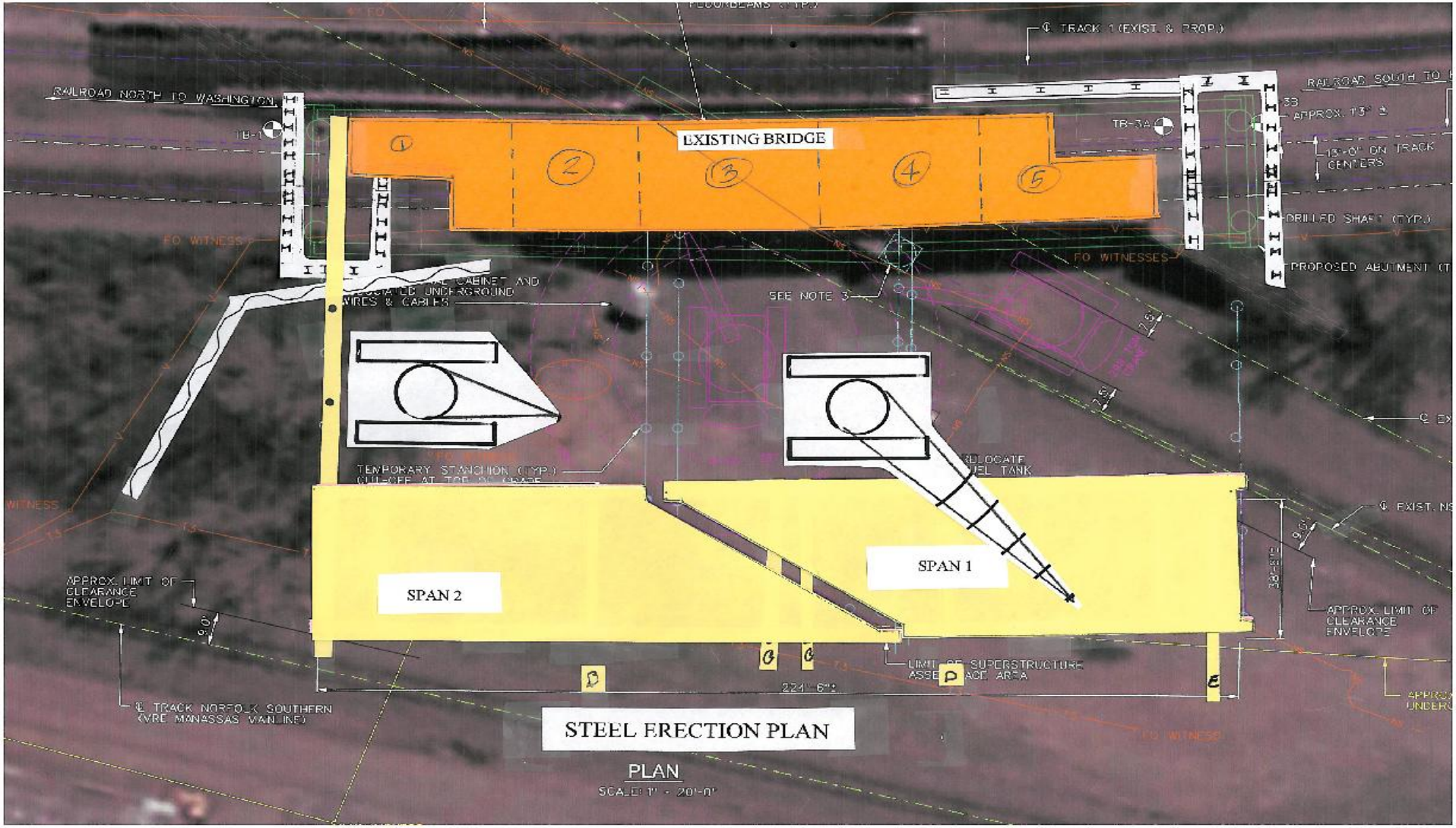
Set All 4 Girders



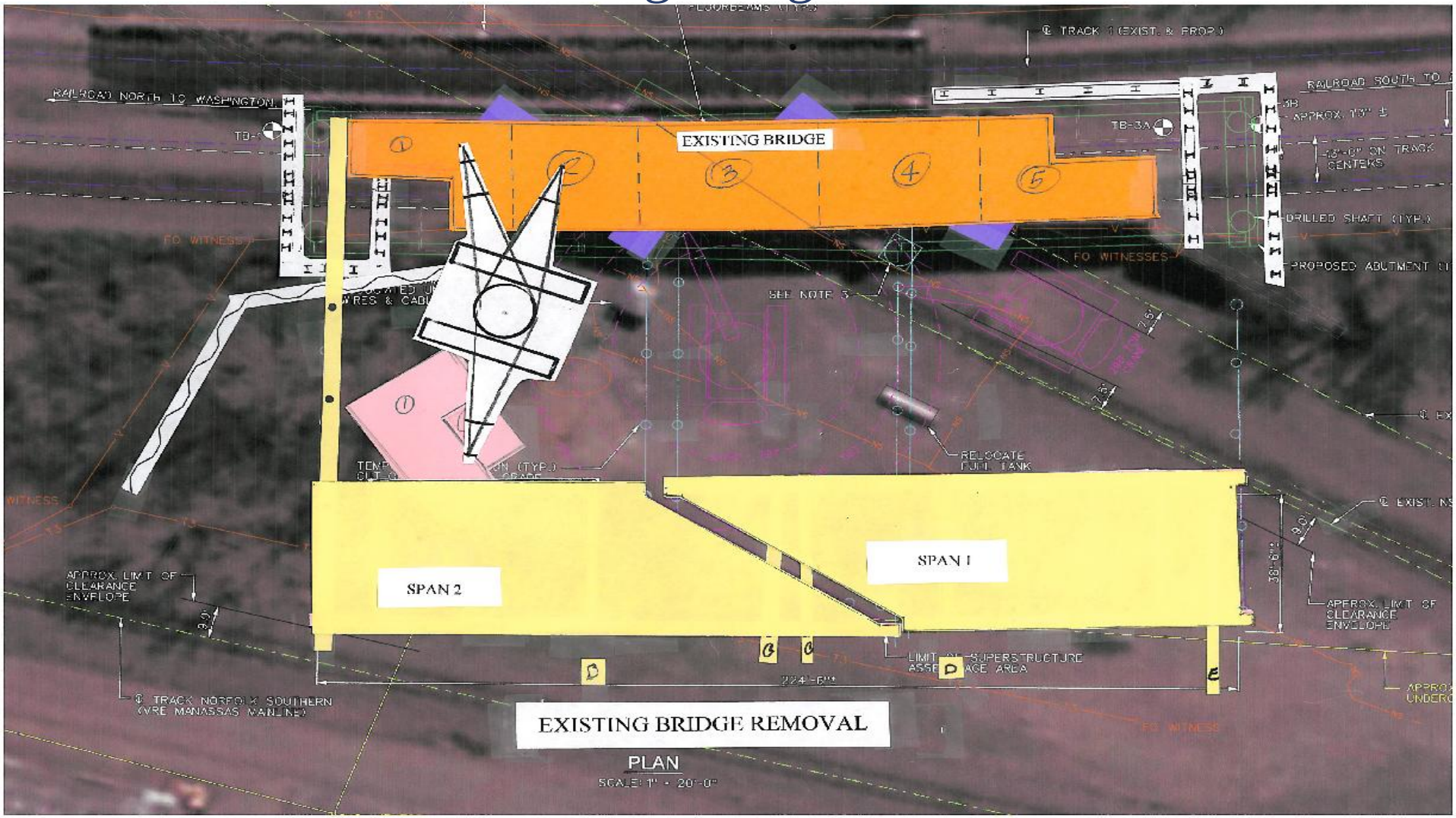
Erection: Floor Beams & Deck Plates Span 2



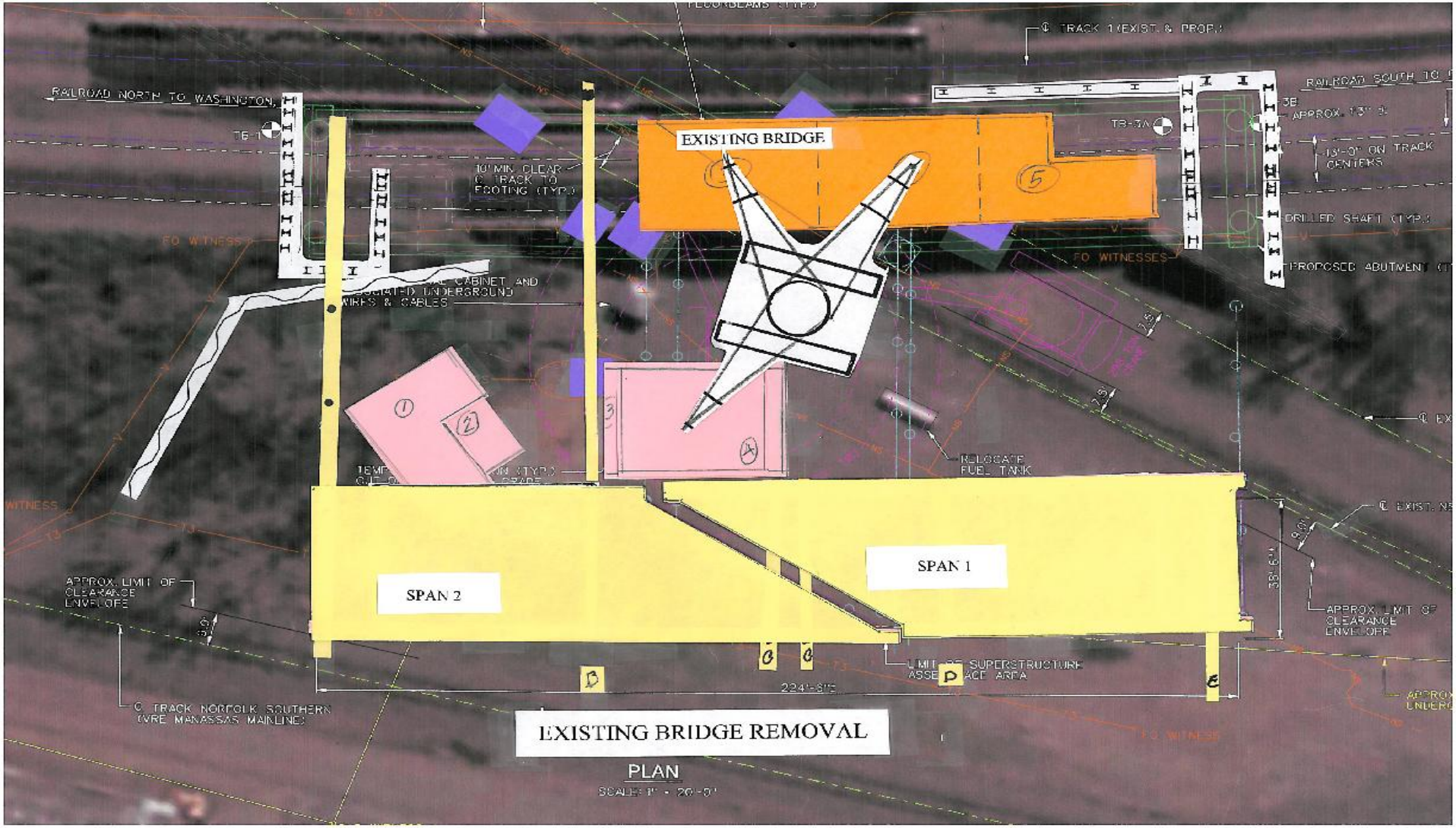
Erection: Floor Beams & Deck Plates Span 1



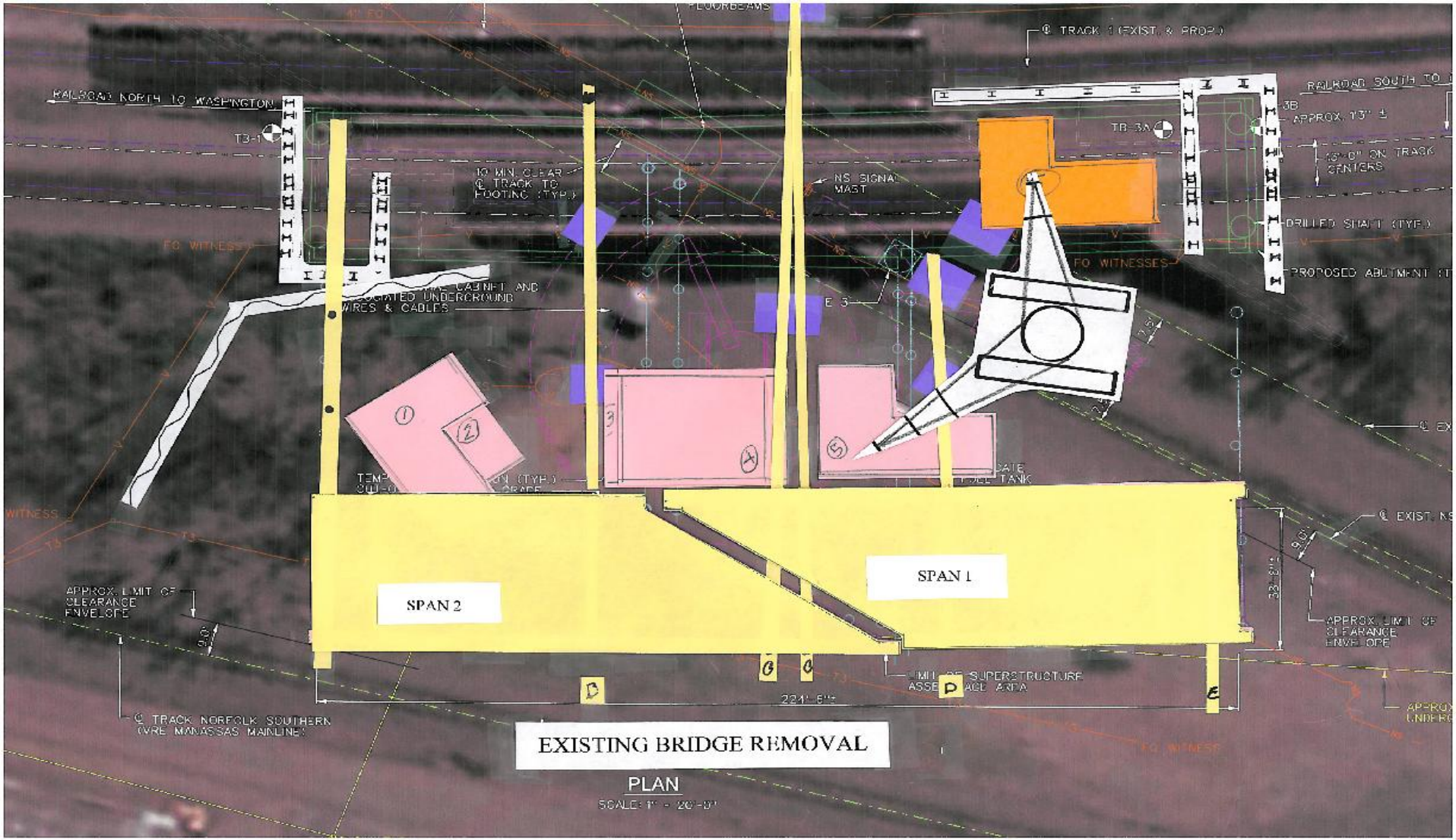
Removal Existing Bridge Sections 1 & 2



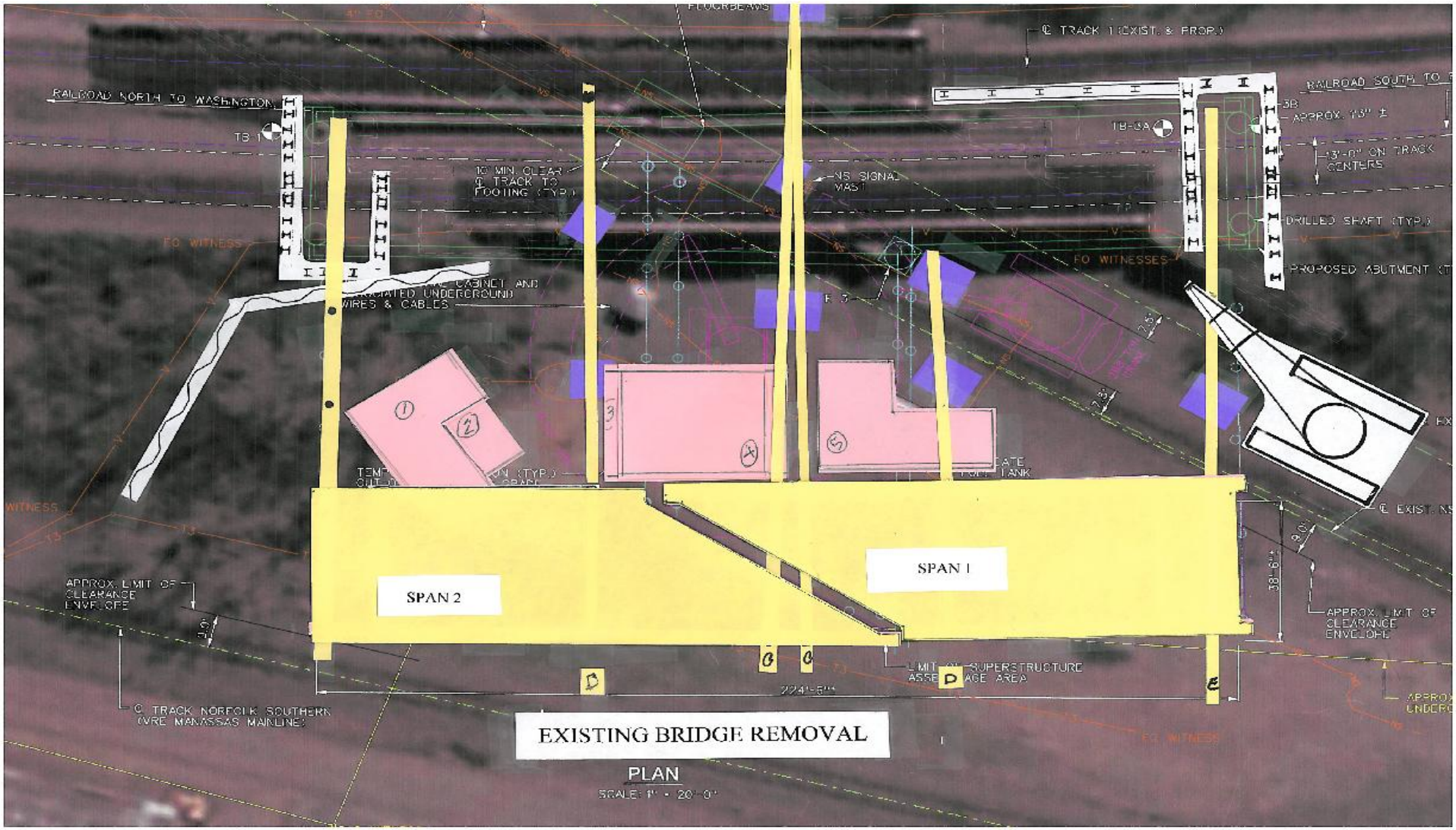
Removal Existing Bridge Sections 3 & 4 & Erect Roll In Beams



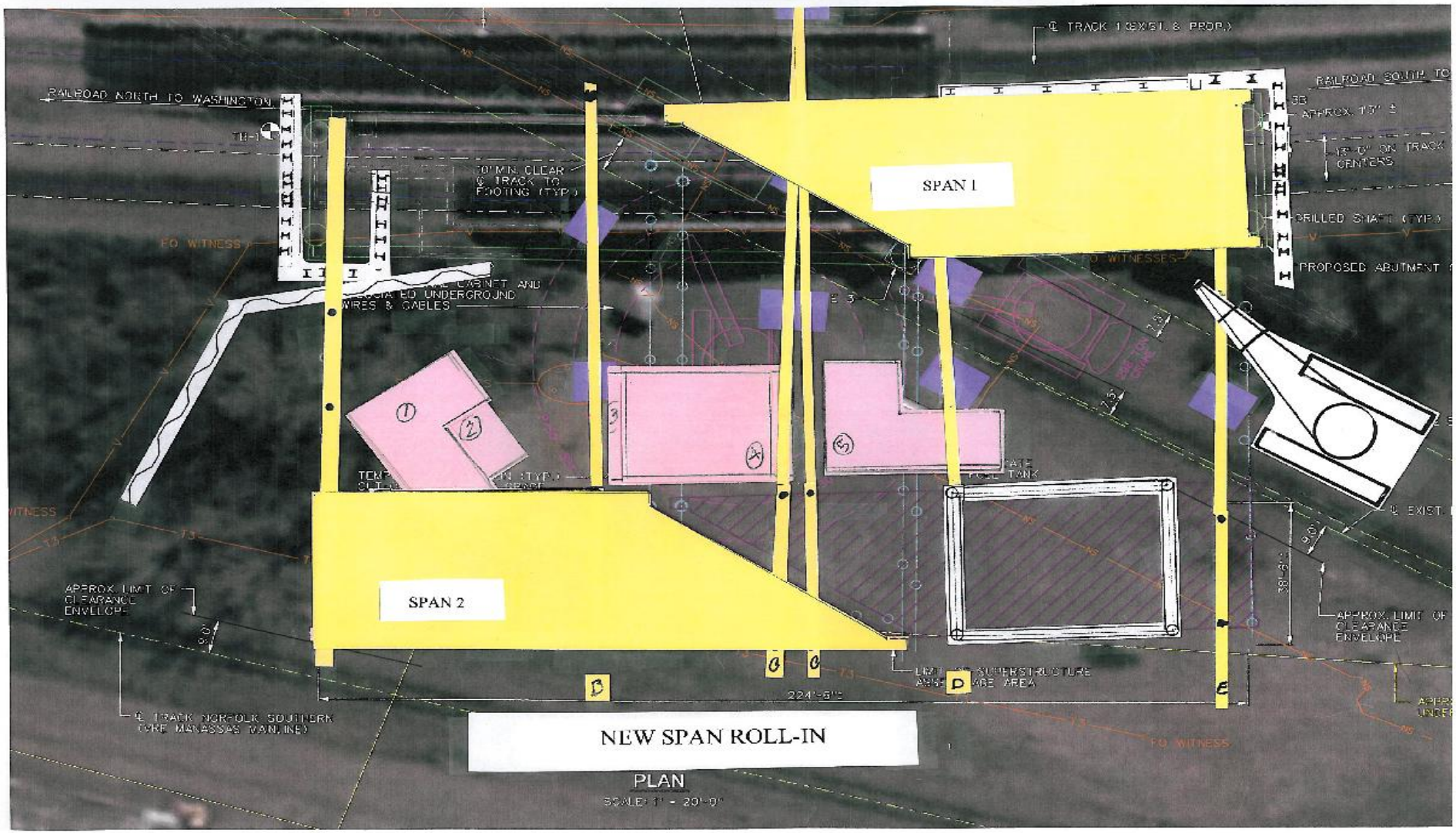
Removal Existing Bridge Section 5 & Erect Roll In Beams



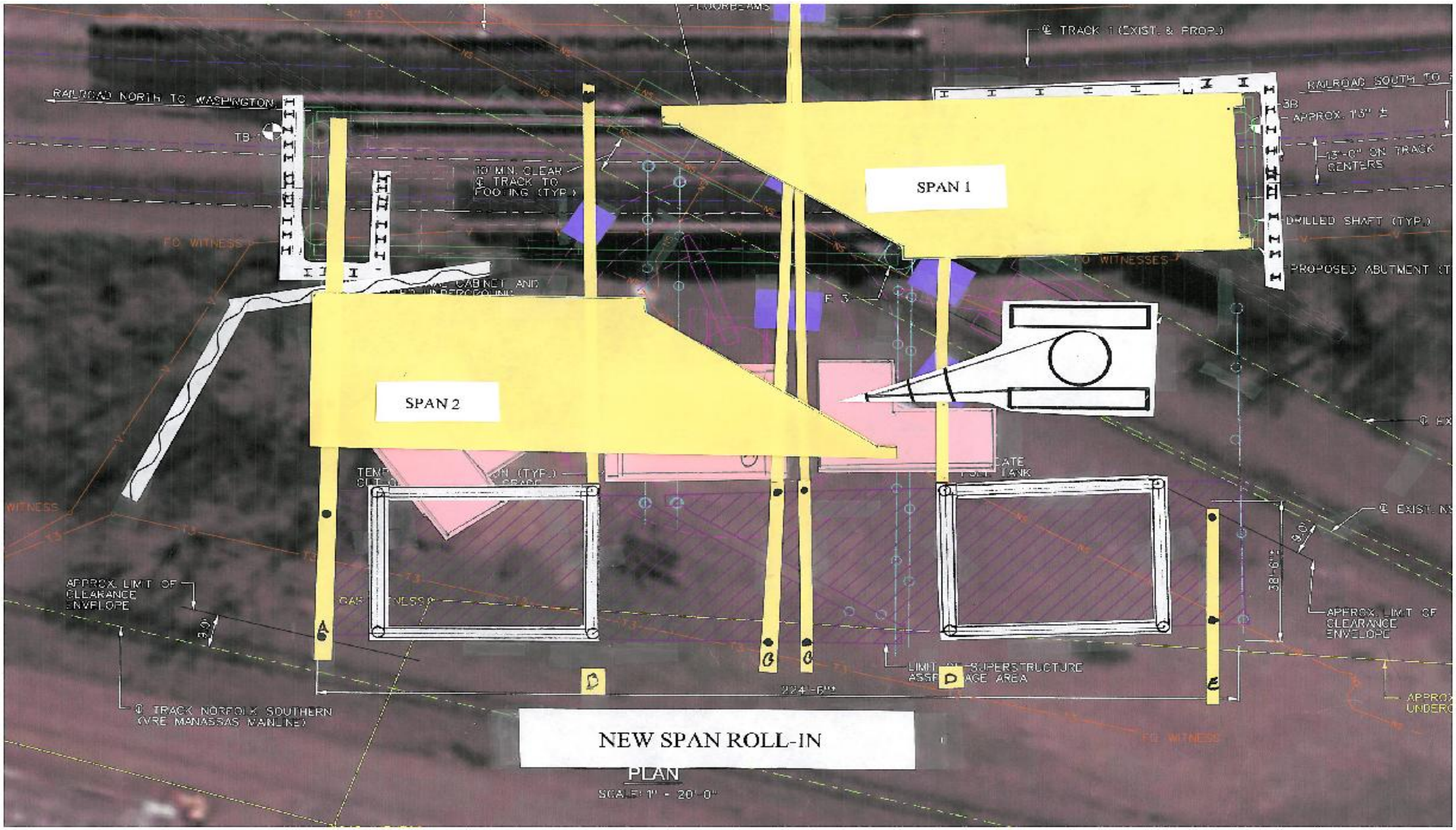
Erect Final Row Roll In Beams



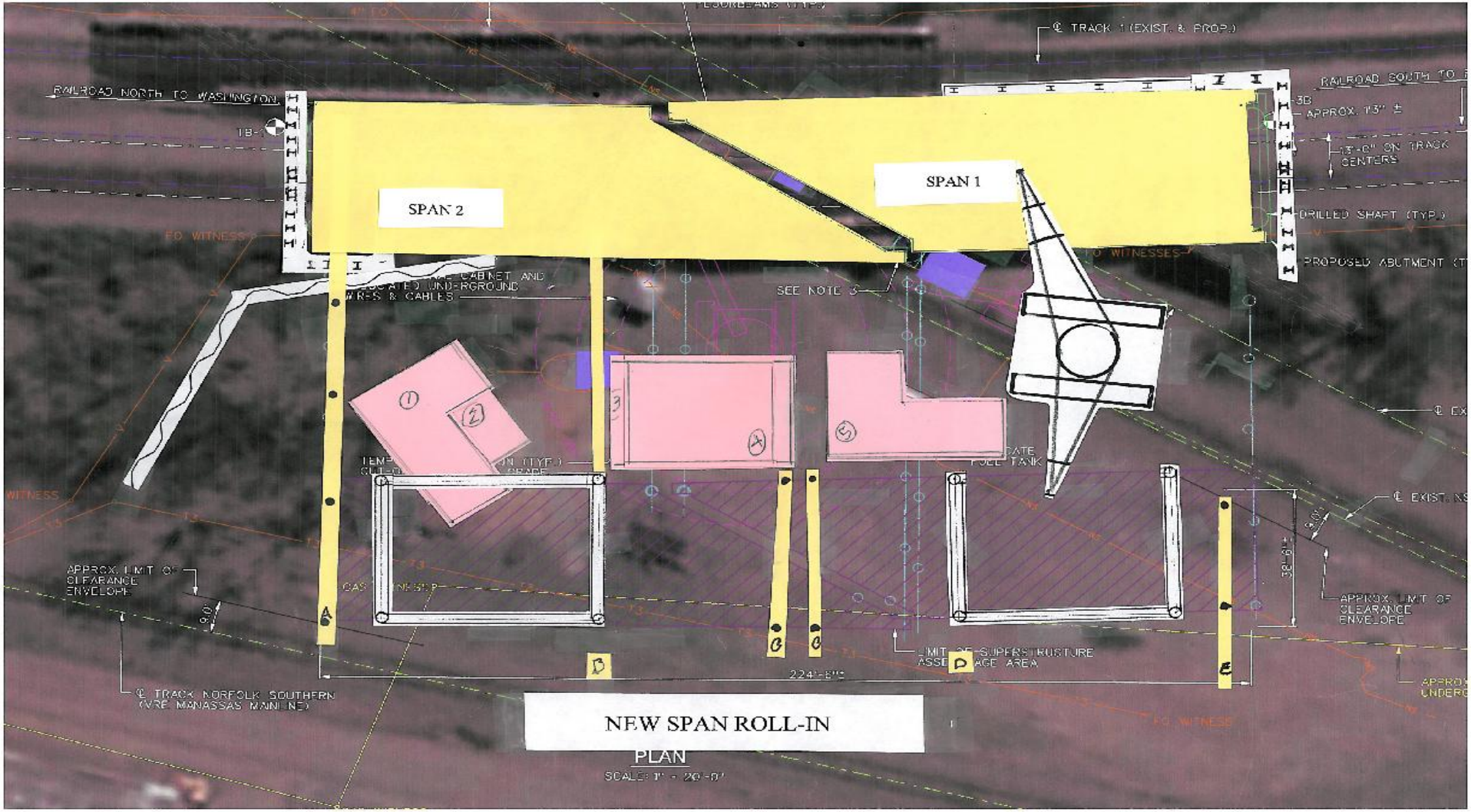
Roll In Span 1



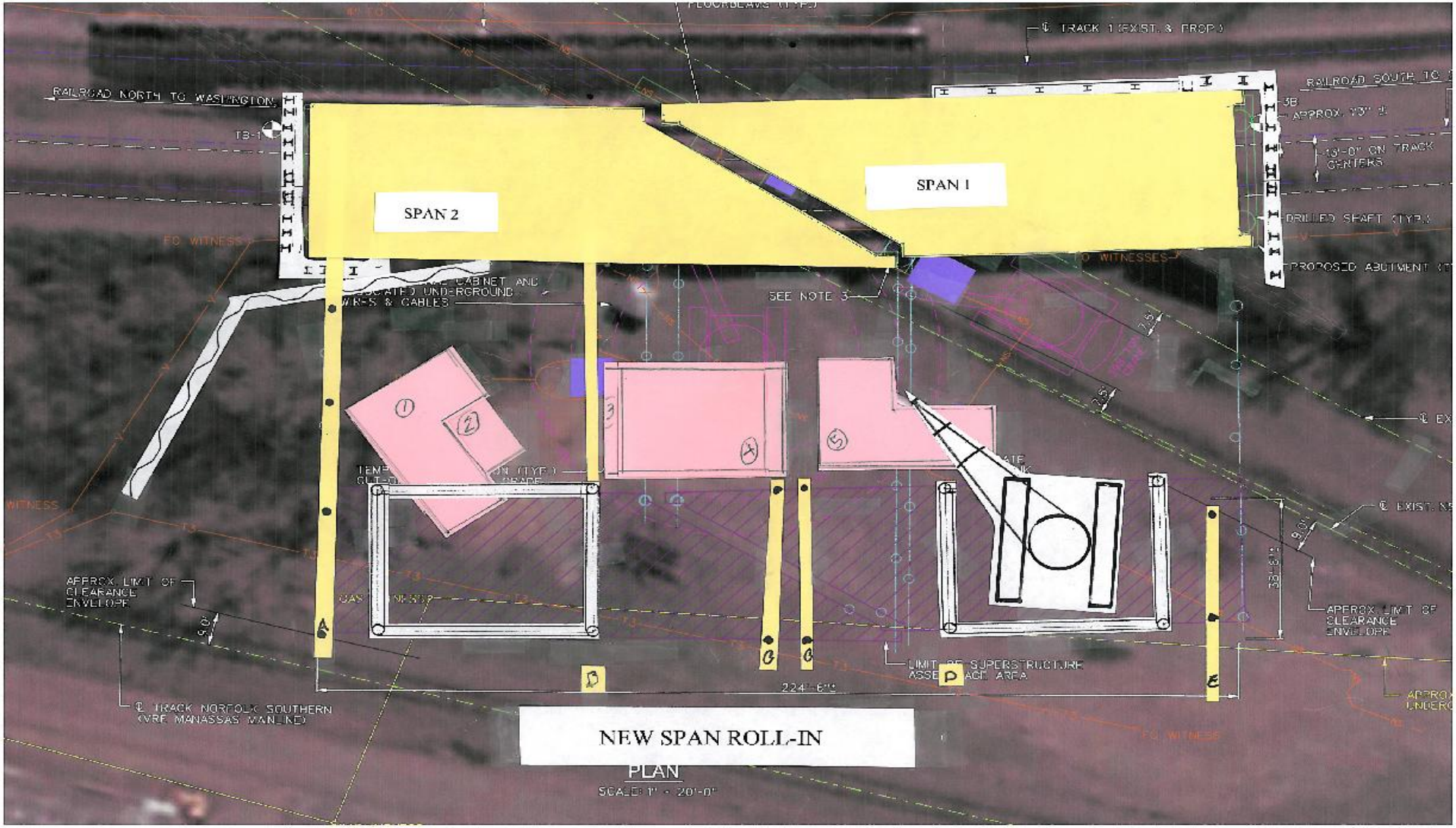
Roll In Span 2 & Remove Roll In Beams



Remove Rollers, Lower Spans On Bearings, Remove Roll In Beams, Set Pre-Assembled Track Sections

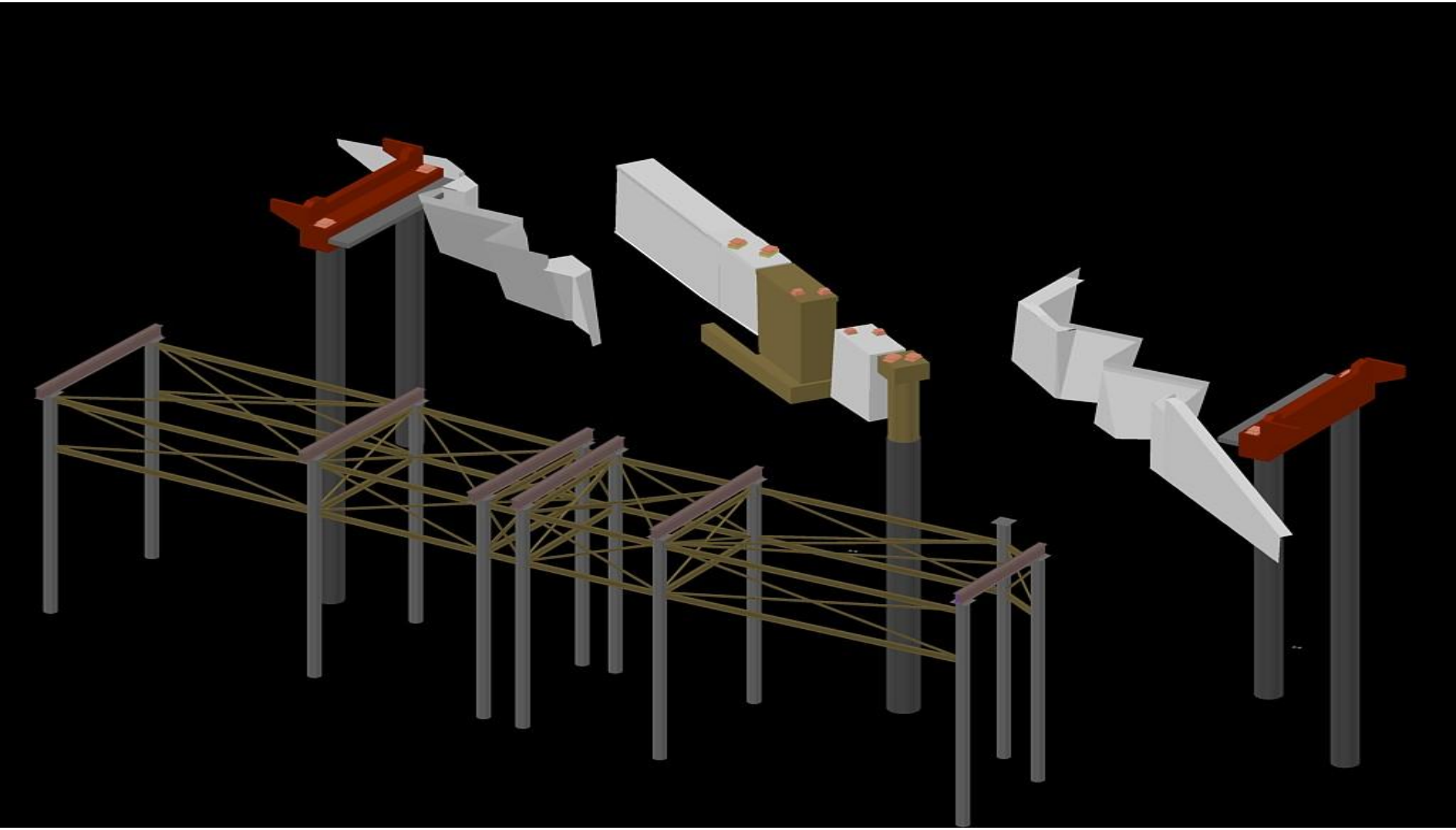


Remove Roll In Beams & Stow Crane

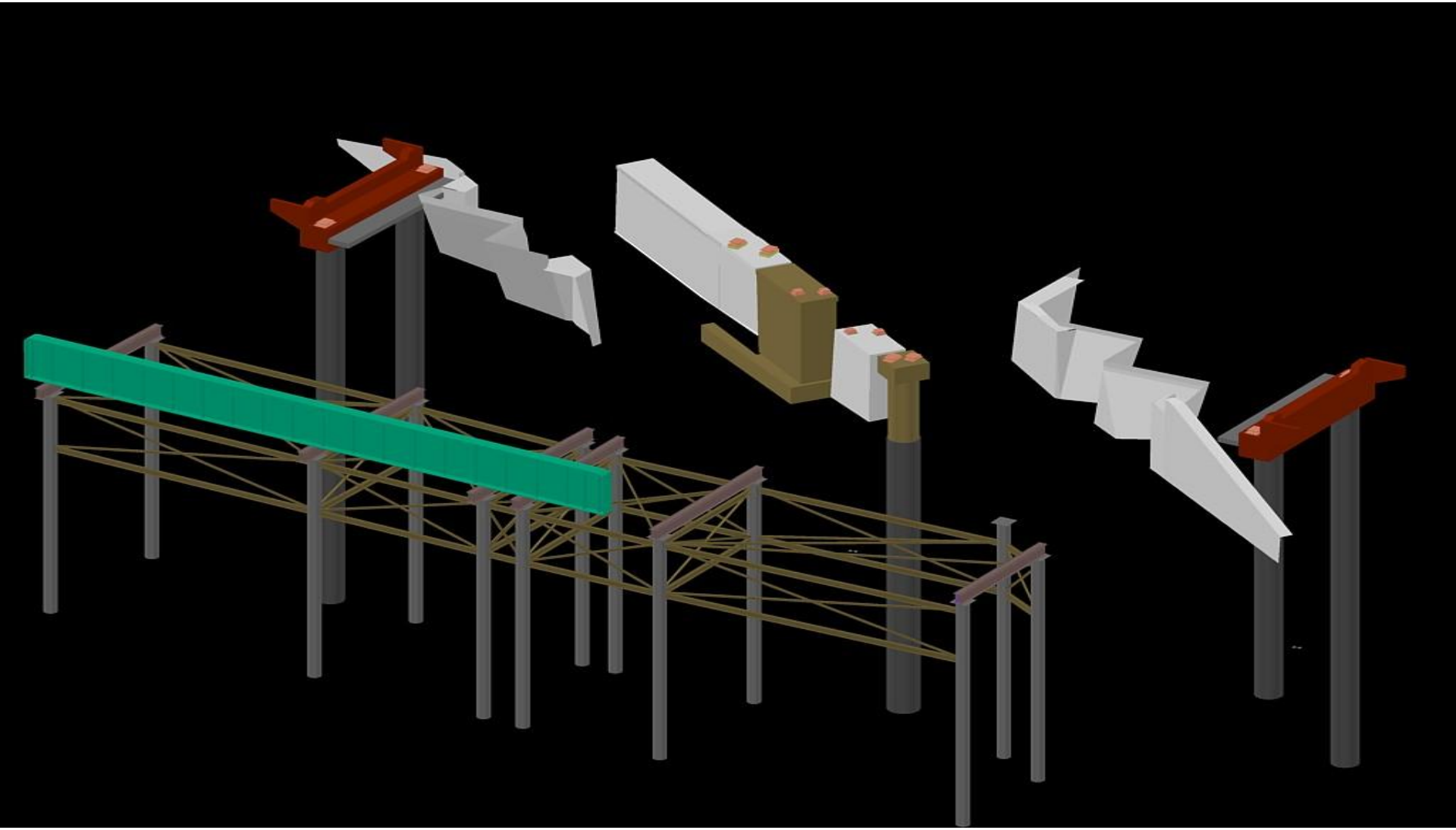


HOW: Overview of Construction Method
ASSEMBLY ANIMATION

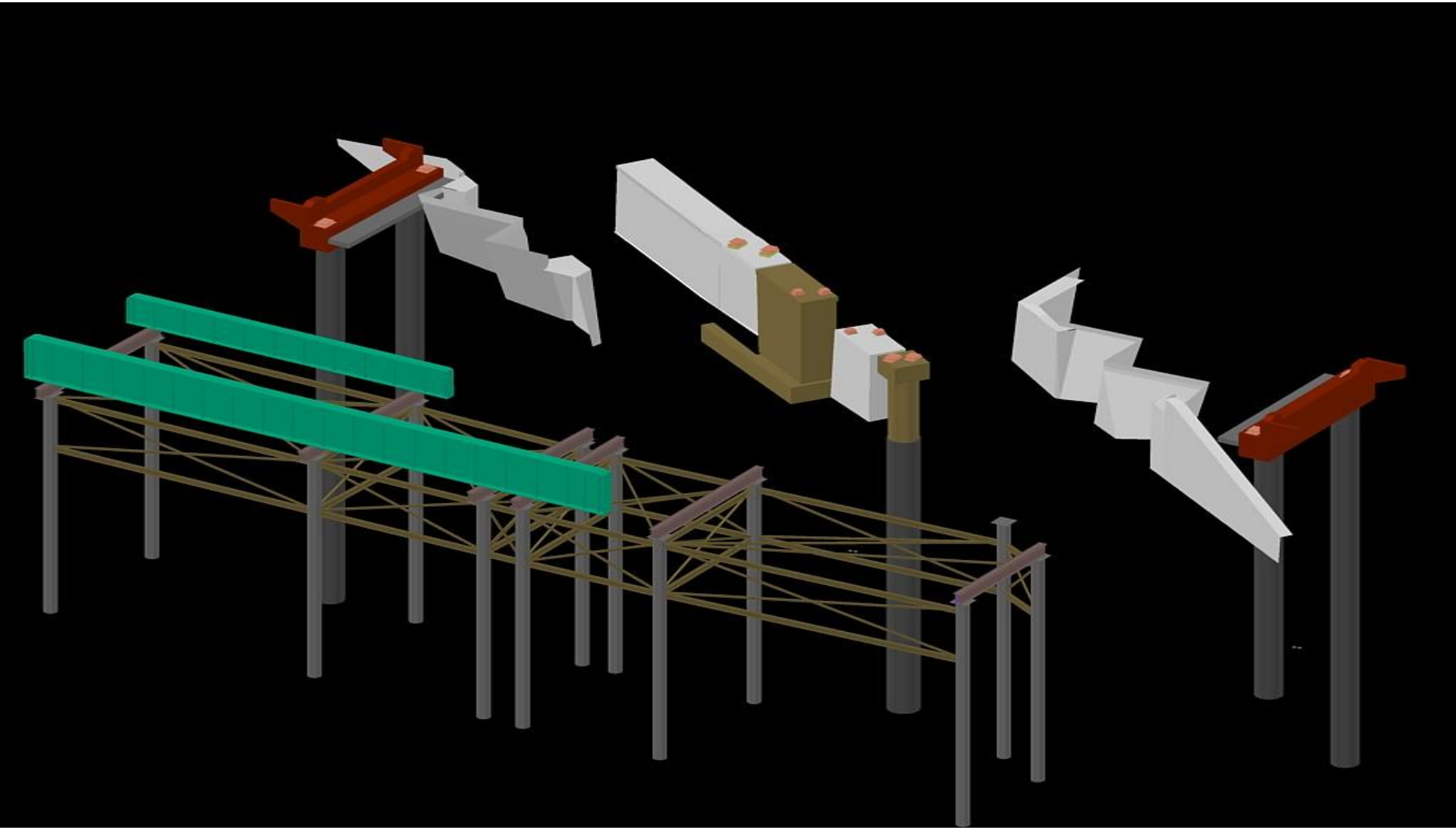
Temporary Support for Structural Steel Bridge



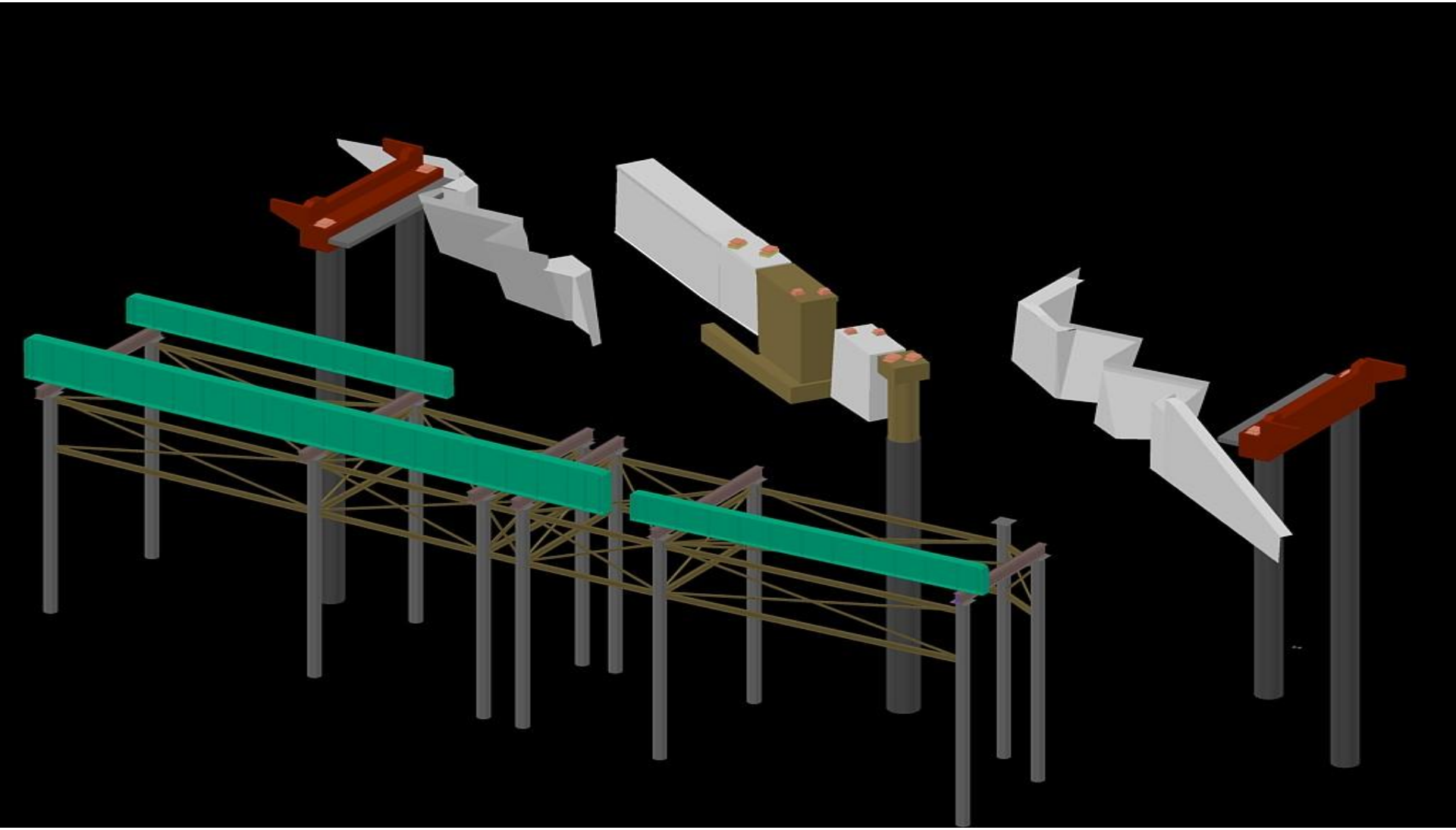
First Girder Set On Temporary Supports



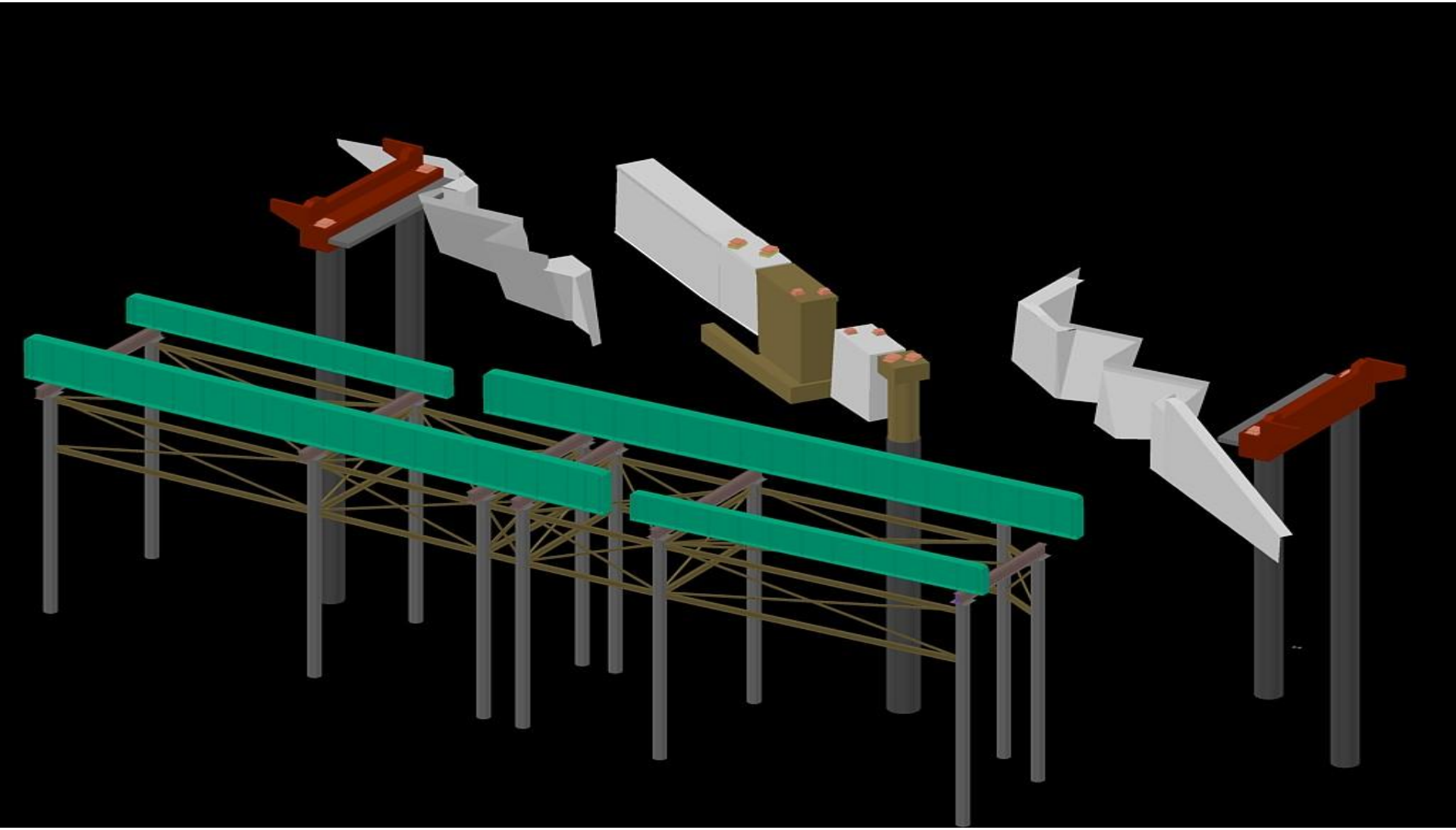
Second Girder Set On Temporary Supports



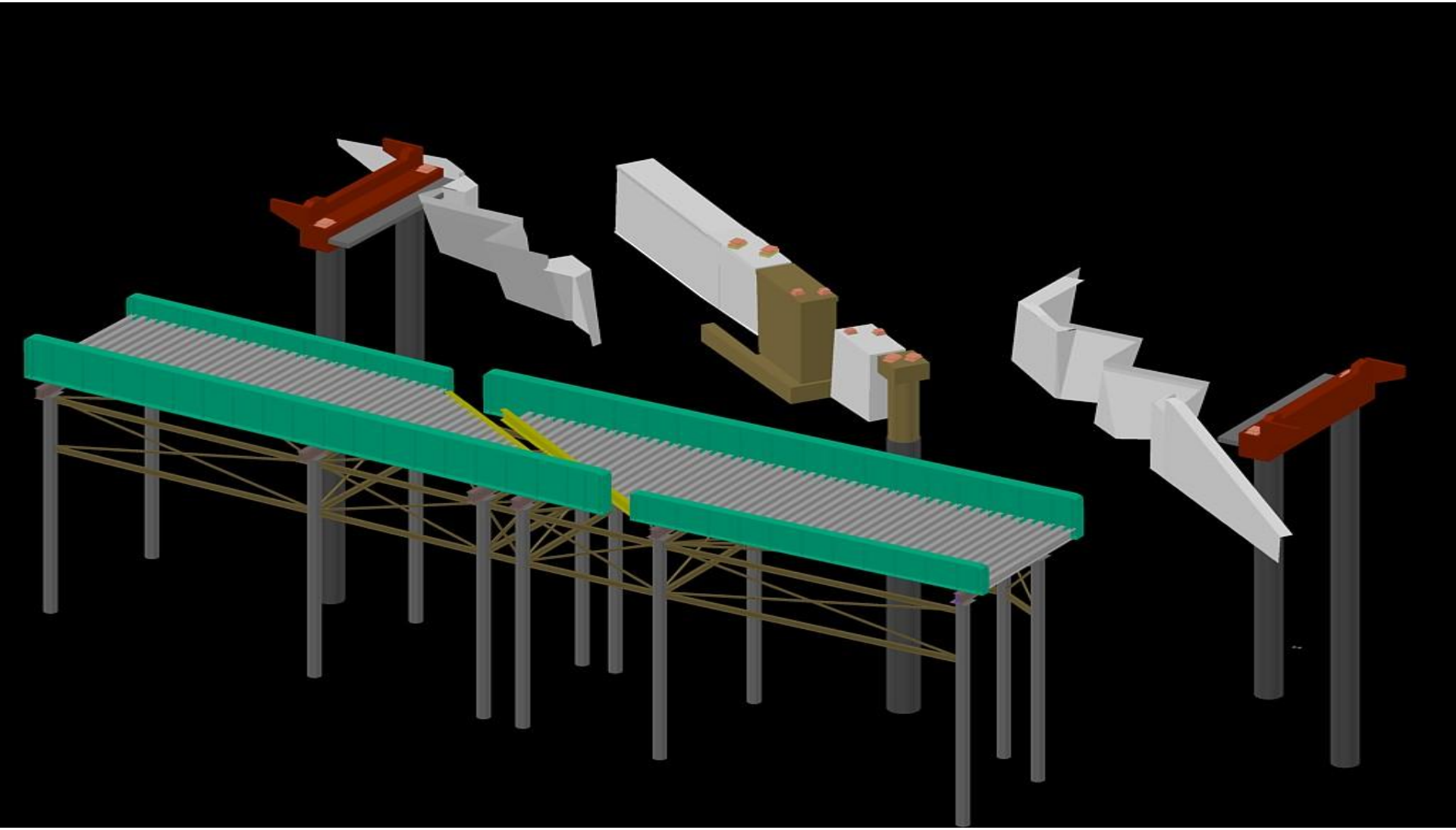
Third Girder Set On Temporary Supports



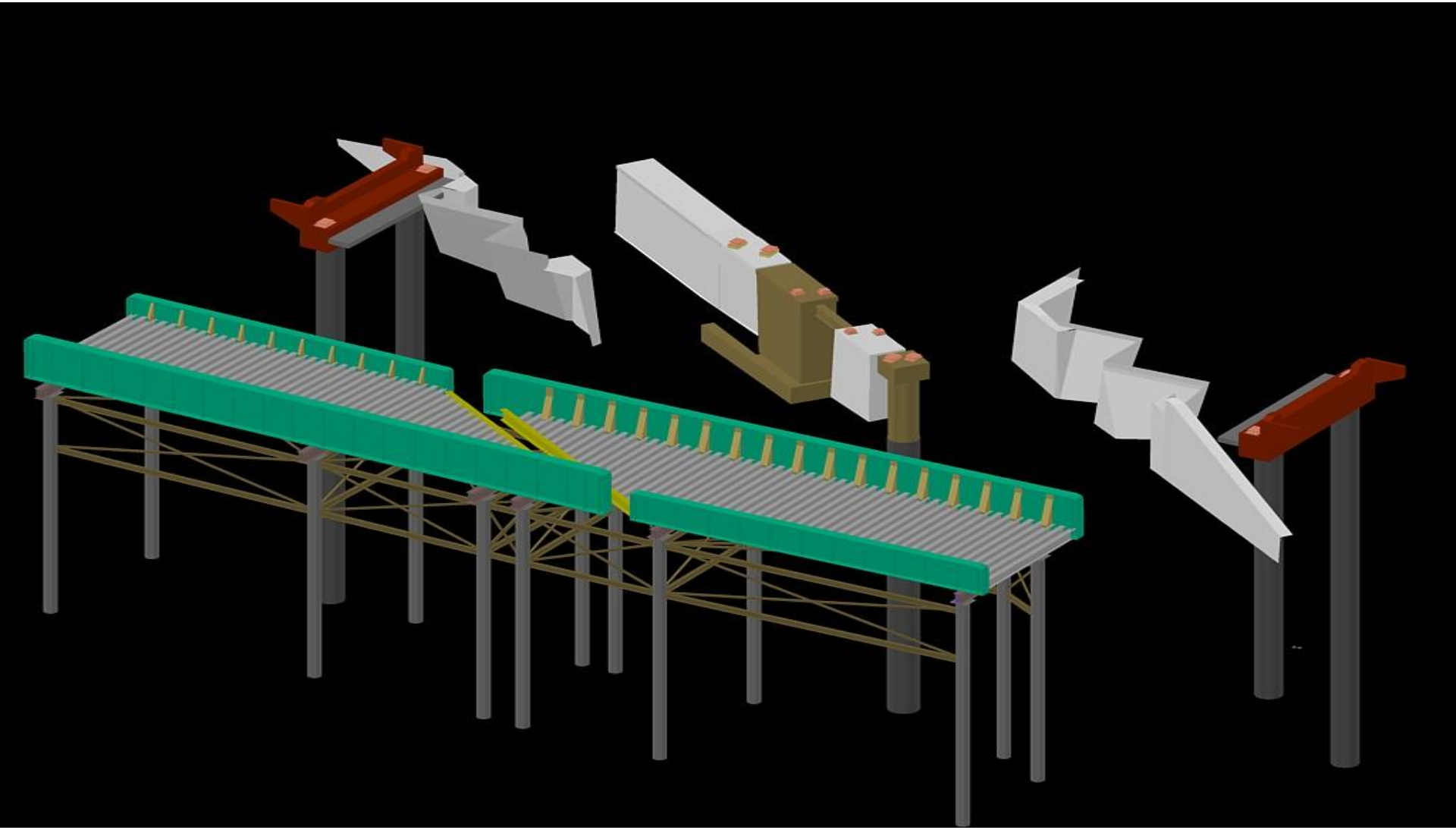
Fourth Girder Set On Temporary Supports



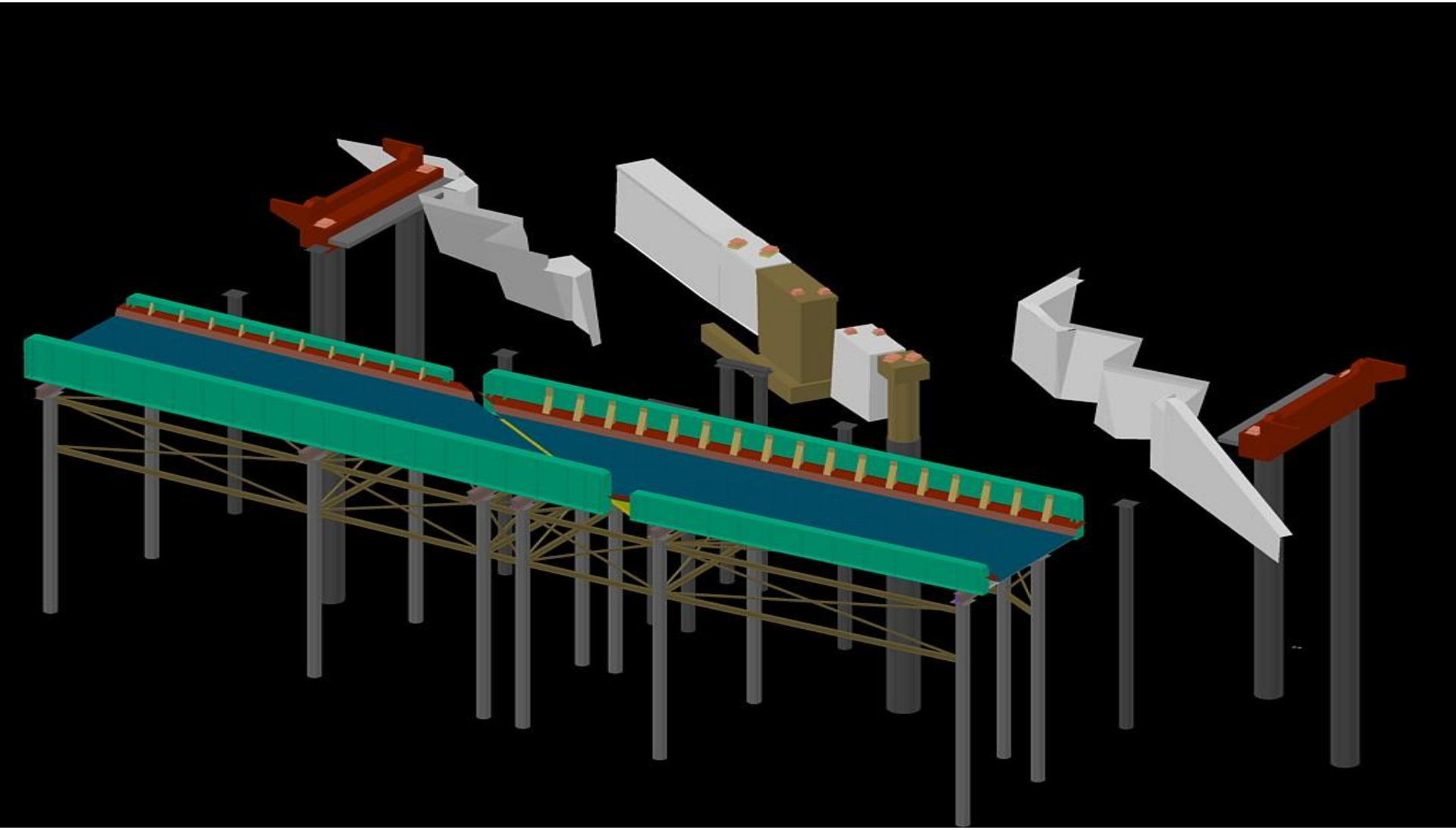
Floor Beams Framed Into Girders



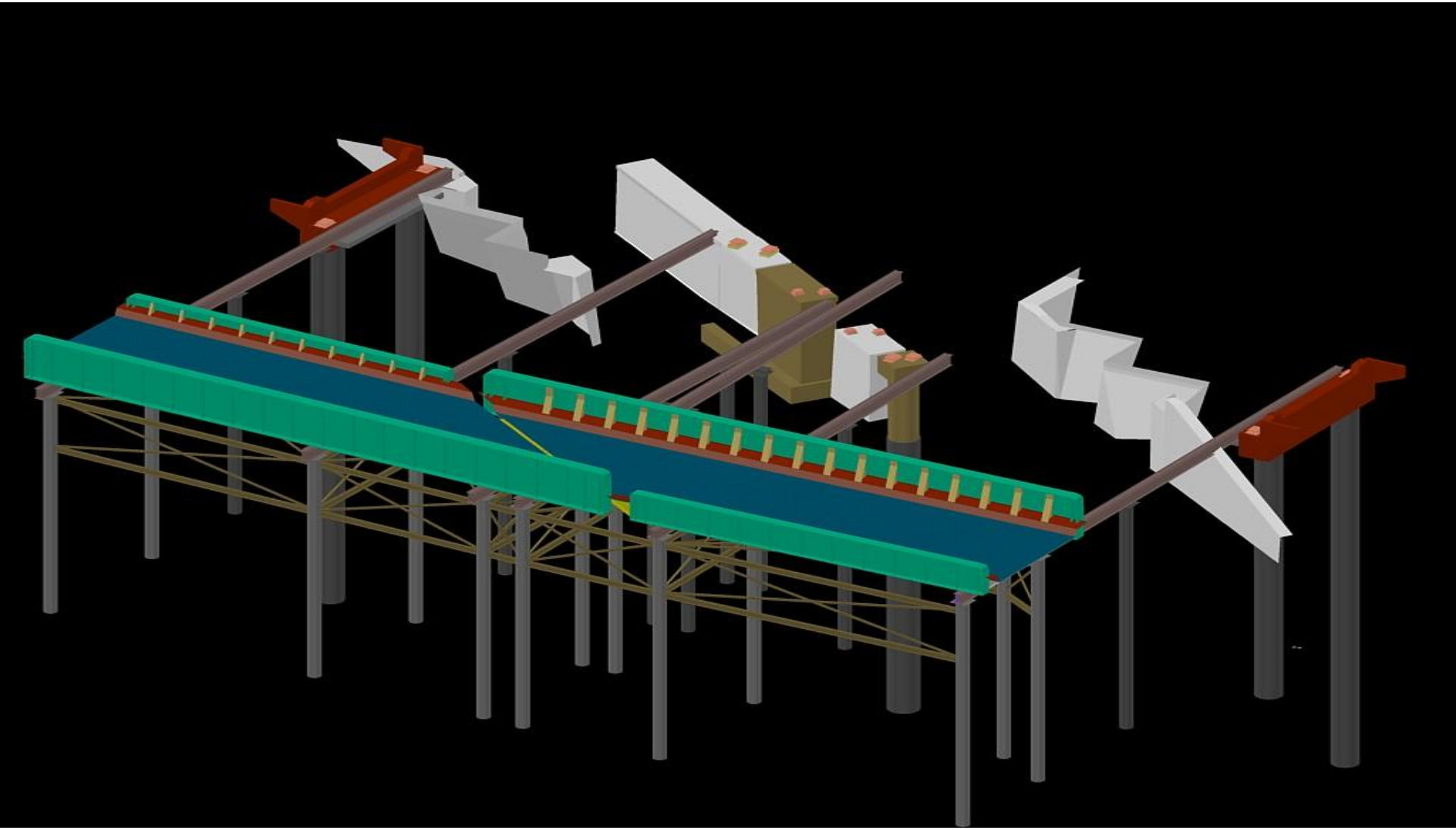
Knee Braces Installed On Floor Beams



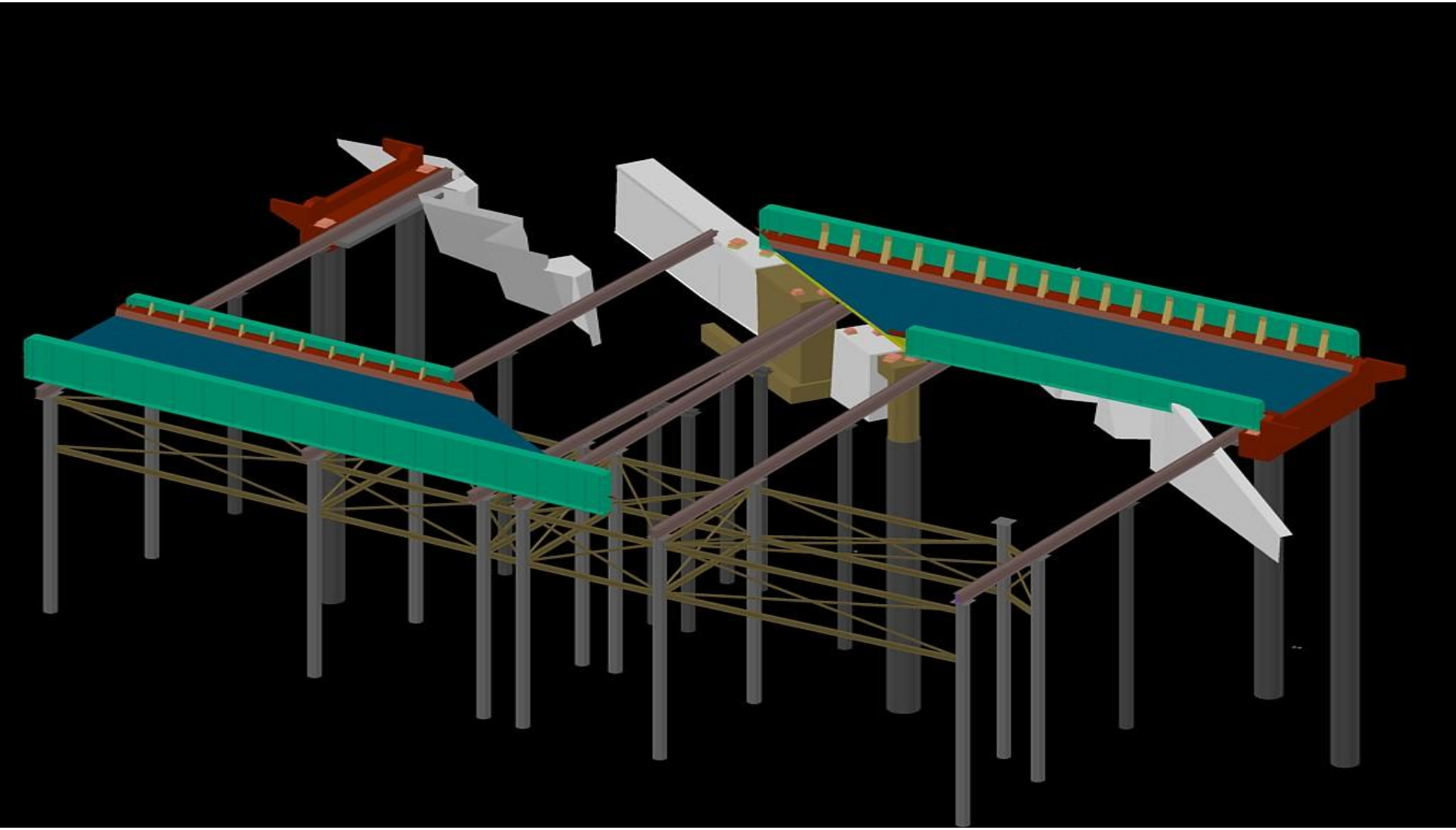
Deck Plates Installed On Floor Beams



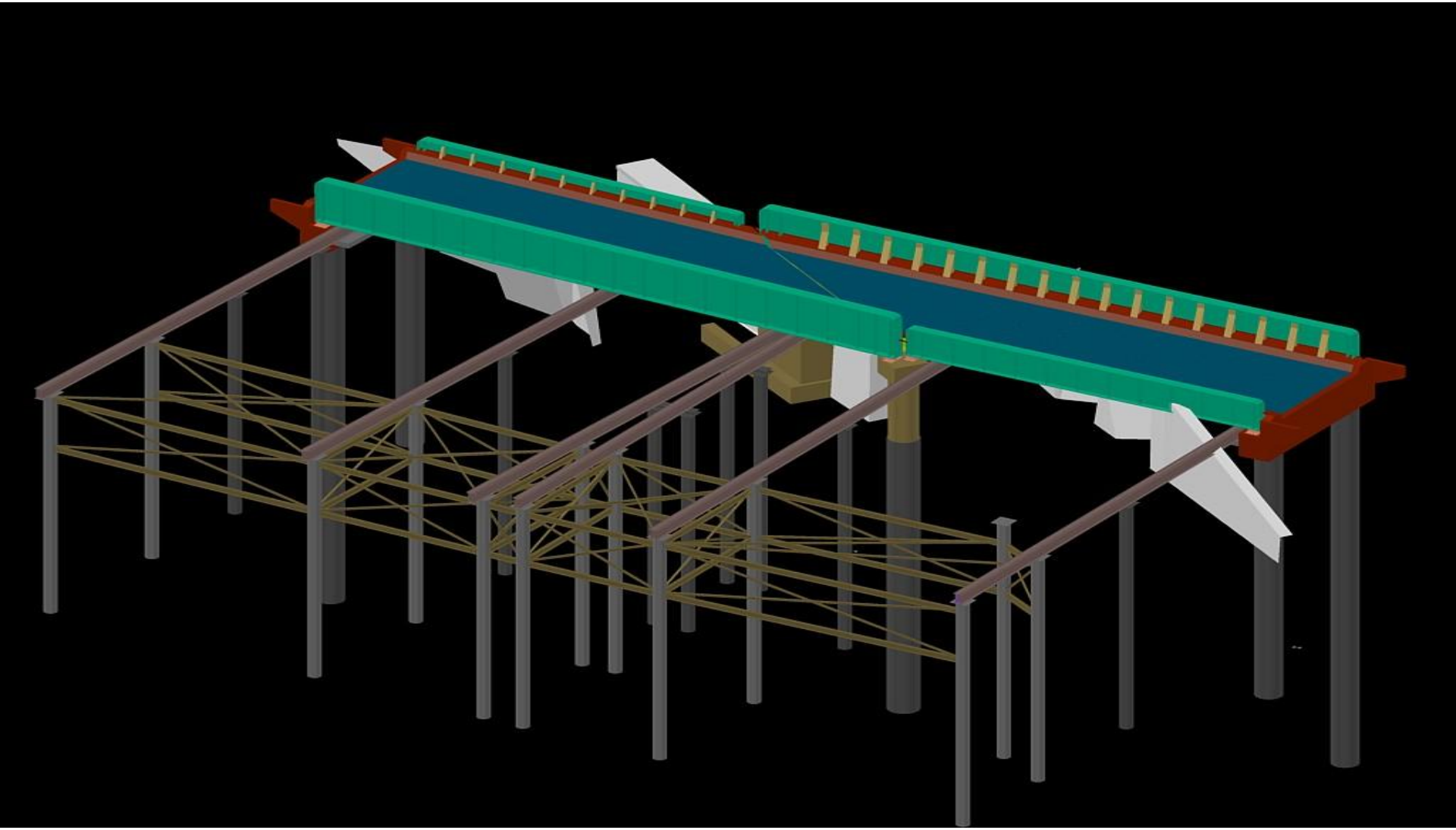
Steel Roll In Beams Set In Place



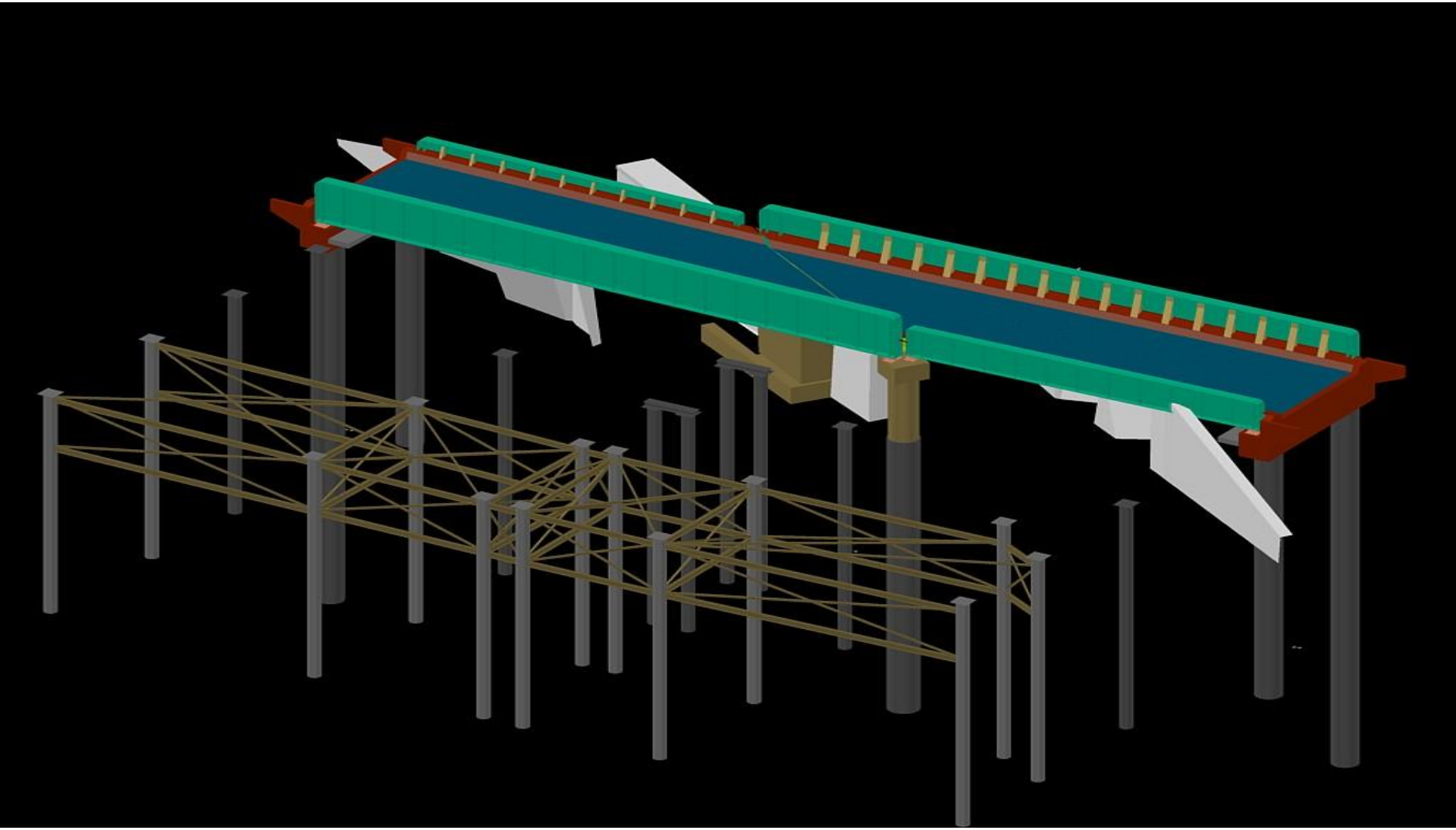
Span 1 Rolled Into Place



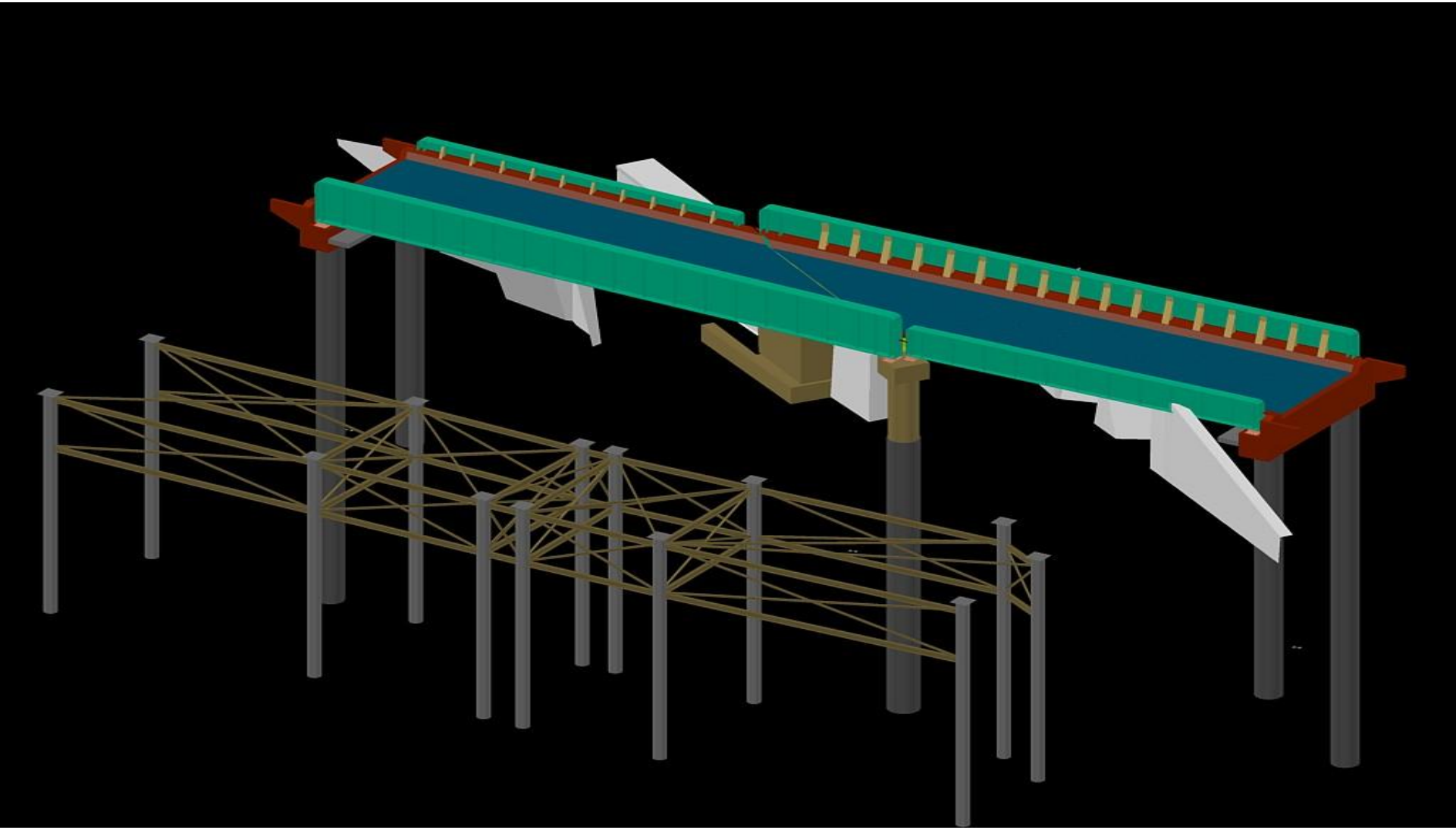
Span 2 Rolled Into Place



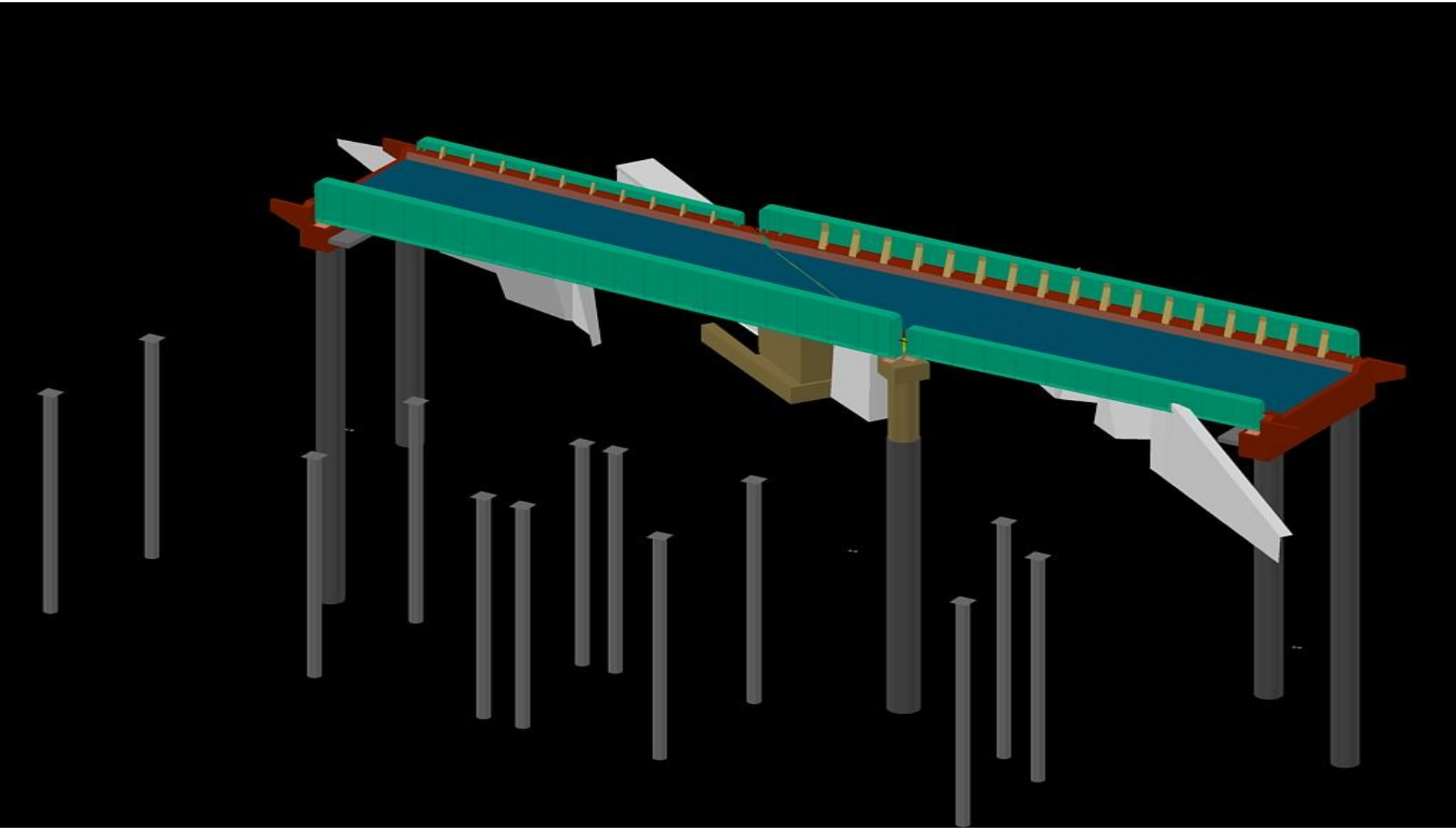
Roll In Beams Removed



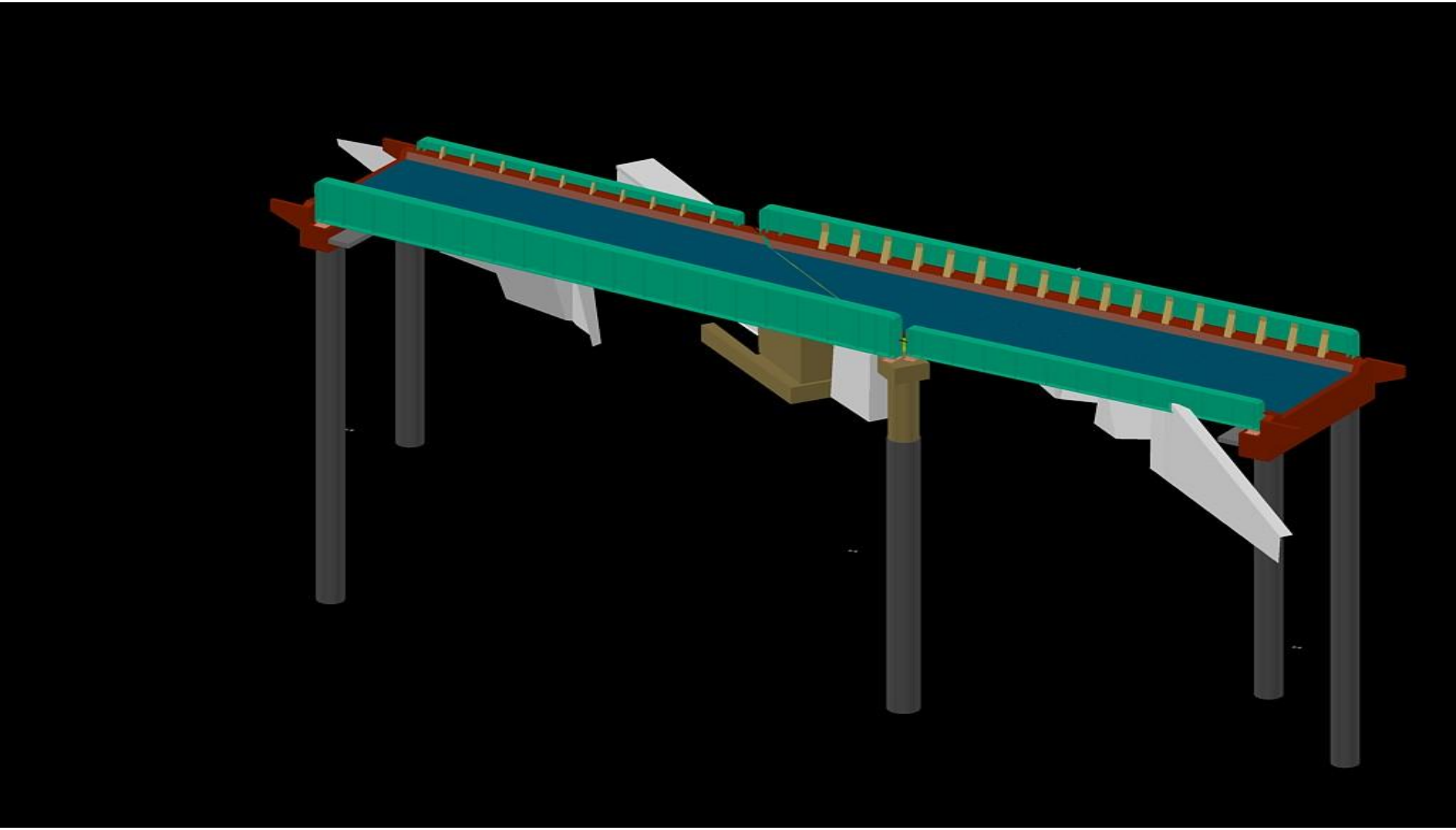
Temporary Towers Removed



Temporary Framing Removed



Temporary Piles Removed



THANK YOU

Questions?

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